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The Lived Experiences of Women in the Information Technology Field as they Transition from One Leadership Level to the Next: A Phenomenological Study

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THE LIVED EXPERIENCES OF WOMEN LEADERS IN THE INFORMATION
TECHNOLOGY FIELD AS THEY TRANSITION FROM ONE LEADERSHIP LEVEL TO THE
NEXT: A PHENOMENOLOGICAL STUDY

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ABSTRACT

There is an increasing disparity of women in the IT field, when compared to men, specifically within IT executive leadership roles. The number of women in IT executive leadership lags drastically behind men IT executives and has gone down by five percent since 2008. Despite significant growth in the IT field women are not growing with it. IT jobs are expected to increase by 1.5 million in the next decade. The purpose and central question of this qualitative phenomenological study was to explore the lived experiences of women and how they develop as IT leaders. Beginning with 19 broad questions, the researcher explored the lived experiences of nine women in IT leadership positions that lived in the Midwest, Southwest and West regions of the United States. Long and in-depth interviews were conducted with participants in order to understand their leadership development experiences in their change in job requirements, change in time application, change in skill set and change in work values as they transitioned from one level of leadership to the next. Participants were women in IT mid- level management and IT executive level leadership that had more than one year of experience in their IT leadership role. Drotter, Charan and Noel's (2011) conceptual leadership development pipeline model was used as the framework for this study. For the purpose of this study, IT middle management roles are referred to as passages 3 or 4, and IT executive leadership roles are referred to as passages 5 or 6 on the leadership development pipeline spectrum.

The phenomenological analytical framework strategy developed by Moustakas (1994) was used to analyze and interpret data that were collected from participants' interviews, resumes, biographies, LinkedIn profiles and other pertinent data such as professional membership affiliations, company and personal websites when available. The phenomenology framework was used to explore and analyze how women in IT fields view their world of leadership development,

which revealed the following eight themes: (1) formal and informal leadership preparation, (2) mentoring, sponsorship and networking, (3) IT workplace and cultural challenges, (4) purposeful and strategic thinking, (5) managing transitions and self-renewal, (6) work life balance and family influence, and (7) strength and resilience. Although some of the findings in this study validated what was found in the literature, new knowledge was also uncovered as well as the need for future research, including how early do women in IT fields start planning a leadership development strategy for executive leadership compared to when men in IT executive leadership fields start. The study shed light on the leadership development and value of women in IT mid-level management and in IT executive leadership positions through their own voices and lived experiences.

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CHAPTER 1

INTRODUCTION

Background

Women holding Information Technology (IT) jobs struggle to reach top executive IT leadership positions because of the lack of leadership development opportunities and the cultural challenges (Catalyst, 2014a, 2014b; Egan, 2015; Kvande & Rasmussen, 1994; Wentling & Thomas, 2009). According to research, women in IT fields and IT executive positions issues are present across all sectors—academia, public and private sectors, and within all regions of the United States (U. S. Bureau of Labor Statistics [BLS], 2014). According to the U. S. Department of Labor Women’s Bureau (WB), women make up 57.2% out of a total U. S. workforce of 160 million people with 37.8% of women holding bachelor’s degrees or higher (WB, 2015). The BLS current population survey (CPS) notes that the information technology workforce has grown to nearly 4.4 million and less than 25% of IT jobs held by women and over 75% of IT jobs are held by men (BLS, 2014). The CPS indicated that IT jobs will increase by 1.5 million within the next decade.

The National Center for Women in Information Technology (NCWIT) found that the information technology field is rapidly growing, however women, especially those in IT executive leadership positions are not keeping pace (NCWIT, 2014). Within the IT leadership pipeline there are different types of leadership jobs ranging from entry level supervisor to executive leadership positions. The CPS also showed over 16 million leadership jobs in the U. S., which include 629,000 IT leadership positions, with women holding only 26% of them, and men holding 76% of IT leadership jobs (BLS, 2014). The CPS found that out of 16 million leadership positions across all sectors, over 1.6 million are executive leadership jobs. The CPS

data showed an aggregate of executive positions across all sectors in the U. S. but did not specifically break the data down by the number of IT executives. In the 2014 State of the CIO Survey, 772 top ranking men and women IT executives participated in the survey, which will be used as a baseline number for IT executives in this study (Muse, 2014).

The literature revealed that women in IT executive positions account for less than 10% of all IT executive leadership jobs and men hold over 90% of them (King, 2012; Rosmarin, 2007). For example, in the U. S., the National Association of State CIOs and IT Senior Executives (NASCIO) show that women in top IT state executive leadership positions represent four positions or eight percent while men represent 46 positions or 92% out of 50 top state IT executive leaders (NASCIO, 2015). These statistics support the findings of other scholars studying women who hold IT executive leadership positions in the U.S. (King, 2012; Rosemarin, 2007). Additionally, Brown (2013) found that since 2008, on an annual basis, there has been a steady decline of IT women in executive leadership positions. Some scholars attribute the decline to the lack of leadership development opportunities for women in IT to gender differences, discrimination, the masculine culture of IT and the low number of women in IT (Acker, 1992; Kvande & Rasmussen, 1994; Lemons & Parzinger, 2001, 2007; NCWIT, 2014; Tapia & Kvasny, 2004; Rutherford, 2001). Researchers have also found that women in IT leadership jobs continue to face the traditional societal and cultural beliefs that women are not suited for high level executive positions (Hartmann & Reskin, 1986; Nadelson, 1987; Tapia & Kvasny, 2004).

During the 20th century, scholars wanted to identify the traits that made some individuals successful as a leader (Bass & Stogdill, 1990). During that time, researchers believed that great leaders were born with innate characteristics that set them apart from other

leaders (Northouse, 2012). These theories were called “great man” theories of leadership (Cherry, 2014) and men were considered the predominant image of leadership. Organizations adopted a male dominated culture and structure based on the male view of leadership (Bass & Stogdill, 1990; Cherry, 2014; Northouse, 2012). Jogulu and Wood (2006) found that the early theories of leadership did not consider or explore the innate traits or any characteristics associated with women in leadership. However, prior to World War II, the few women leaders that existed were treated as if they were invisible and their leadership roles were not fully recognized (Barnett, 1993; Davis, 2012, Lewis, 2001).

Horsford (2012) found that some women were given leadership roles as a stop gap on a very temporal basis which she calls “bridge leadership” (p. 11). Women in male dominated leadership occupations became more prevalent during World War II when there was a shortage of male leaders due to men joining the military (Gordon, 2014; Lewis, 2001). While men were away fighting, women were hired to manufacture ammunition, an occupation which had predominately been held by men. Some women were also expected to perform temporary leadership duties. However, because it was not customary for women to hold leadership positions, they were not hired in a leadership capacity on a permanent basis (Lewis, 2001).

Although women in leadership roles continue to be subjected to societal and cultural stereotypes they also continue to obtain leadership positions in male dominated occupations (Hartmann & Reskin, 1986; Kvande & Rasmussen, 1994; Lewis, 2001; Nadelson, 1987; Tapia & Kvasny, 2004). According to Klenke (2011) in the 1980’s the number of women in leadership roles grew significantly and became highly visible. At the same time women careers in IT began to peak and ultimately opened doors for women to enter into IT leadership roles (Camp, 2001).

According to the U.S. Department of Labor Women's Bureau women account for over 57% of the U. S. workforce comprising more than half of the total U.S. workforce and is expected to increase by over five percent annually (WB, 2015). The U.S. Department of Labor Women's Bureau reported that women in the workplace have high representation in education and health sciences at 36.2%, however information technology is one of the fields with the lowest representation of women at 1.7% (WB, 2015). The low percentage also includes women in IT leadership positions.

Scholars have found that women in IT leadership jobs continue to significantly lag behind men (Brown, 2013; Greenhaus, Igbaria & Parasuraman, 1997; NCWIT, 2014). Scholars also found that women in IT leadership face significant obstacles and challenges that hinder their ability to obtain essential leadership development skills which is a critical requirement to achieve executive leadership levels (Ashcraft & Blithe, 2009; Egan, 2015; Wentling & Thomas, 2009). Another contributing factor is that the low number of women in the IT workforce is discouraging to women (Ashcraft & Blithe, 2010).

Forbes reported that women employed in IT fields dropped from 23% in 2000 to 16% in 2006 (Rosmarin, 2007). In 1985 at universities, 37% of computer science degrees went to women, however in 2006 that number fell by nearly half (Rosmarin, 2007). There has been a significant and steady decline of women studying technology at universities and that number continues to spiral downward (NCWIT, 2014). Ashcraft and Blithe (2010) found that the underrepresentation of women in IT have a negative impact on women pursuing IT studies at universities and on the number of women in IT, ultimately reducing the number of women available for IT leadership jobs. The shortage of women in IT leadership jobs limits the number of IT women executives available to mentor and sponsor other women in IT (Ashcraft & Blithe,

2009; Katz & Salaway, 2004; NCWIT, 2014). Other issues cited for the low representation of women in IT fields is the cultural environment that generally exists within IT organizations.

Having more women in IT leadership executive roles is particularly important in order to begin significant changes in the culture of IT. Scholars studying the culture of IT organizations found that it is mostly a male dominated environment that is oftentimes antagonistic, chauvinistic and egotistical (Kvande & Rasmussen, 1994; Tapia & Kvasny, 2004). Some women assimilate into the IT culture, by adopting masculine characteristics and traits in order to be accepted. However, it is not authentic acceptance because usually they are perceived as too heavy handed and aggressive (Tapia & Kvasny, 2004; Rutherford, 2001). In general, women in IT fields are oftentimes met with skepticism, negative attitudes and behaviors; they struggle to adapt and be accepted into the IT culture (NCWIT, 2014; Rutherford, 2001). These negative behaviors are manifested in greater depth as women advance to higher level positions in IT fields (Hoobler, Lemmon & Wayne, 2011). Men in IT leadership roles and those at technical levels have difficulty accepting women as credible and worthy of authority and leadership (Hoobler et al., 2011; Sczesny, 2003). These attitudes and stereotypes present barriers for women in IT fields, especially those who are in leadership roles and those aspiring to be an IT leader (Ahuja, 2002; Trauth & Howcroft, 2006).

Problem Statement

Women in IT leadership jobs account for about 26% of the total IT workforce of nearly 4.4 million (BLS, 2014). However, out of 1.6 million executive leadership jobs across all sectors. Based on survey results of 772 top IT executive jobs, women hold less than 10% of the IT executive jobs (BLS, 2014; Muse, 2014; NASCIO, 2015). Additionally, in 2009 NCWIT reported that a staggering 56% of women in IT exit their jobs with nearly 40% of them

leaving from a mid-management leadership positions (Ashcraft & Blithe, 2009). Research has shown that some women in IT leadership roles, who spent a significant amount of years investing in and developing their careers, cite that barriers such as lack of opportunity for promotion and lack of effective leadership development are some of the key reasons for their departure (Ahuja, 2002; Ashcraft & Blithe, 2009; NCWIT, 2015). Also, women in IT leadership roles continue to face gender and cultural discrimination in the workplace challenging their leadership abilities and impeding upon their development. These barriers prevent women in IT leadership from access to promotions and executive leadership opportunities (Ahuja, 2002; Trauth & Howcroft, 2006). These workplace challenges and obstacles were identified more than ten years ago (Ahuja, 2002; Swerdlow, 1989; Trauth & Howcroft, 2006) and are still in need of attention.

Although women represent a significant portion of the labor force in the U.S., they are underrepresented in the IT workforce and in IT leadership (Catalyst, 2015, WB, 2015). At the same time, the U.S. Department of Labor (DOL) reports that there is an IT labor shortage (DOL, 2014; McDougal, 2012). Studies have shown that organizations are missing out on the valuable perspectives that women in IT bring to the workplace and to leadership (Alford, 2011; Ashcraft & Blithe, 2009). Research suggests that increasing the number of women in IT leadership would improve problem-solving, productivity and innovation in technology and increase the number of women in IT leadership positions (Alford, 2011; Ashcraft & Blithe, 2009).

Purpose of Study

The purpose of this qualitative phenomenological study was to explore women's lived experiences in their development as leaders in IT fields. Prior to this study, little was known about the nature of the informal and formal quality of leadership development experienced by

women in IT as they moved from one level of leadership to the next. This study examined the lived experiences of women in IT leadership roles to understand how they developed their leadership abilities as the transition from one leadership level to the next.

Research Question

According to Foss and Waters (2007), “the research question is the most important part of the dissertation and takes the most effort and care to develop” (p. 36). The purpose of this qualitative phenomenological was to explore the lived experiences of women as they transition into middle level management and executive level leadership positions in IT fields? The research question and sub-questions guiding this study were:

1. What are the lived experiences of women in IT fields as they transition into middle level management (passages 3 or 4) and/or executive level leadership (passages 5 or 6) positions as identified in Drotter, Charan, and Noel’s (2011) conceptual leadership development pipeline model?
 - a. What are the changes in time application during those transitions?
 - b. What are the changes in skill sets during those transitions?
 - c. What are the changes in work values during those transitions?

Within the Drotter et al. (2011) conceptual leadership development framework model, middle management roles are referred to as passages 3 or 4, and executive leadership roles as passages 5 or 6 on the leadership spectrum, which is covered in the conceptual framework section of this study.

Significance of the Study

Previous studies have focused on the obstacles and challenges that women face in information technology, and while literature exist on career transition, very little literature exist

on job transition within the same career path. Research is nearly nonexistent on the lived experiences of how women develop their leadership abilities as they move from one leadership level to the next in IT fields. The phenomenon being studied touches upon the importance of leadership development for women in information technology and anticipates that the findings will provide a better understanding of how women in IT leadership roles develop their leadership abilities at various levels of leadership. The study will (1) help organizations gain a better understanding of the challenges and barriers that women in IT leadership face and what need to be done to facilitate the advancement of women in IT leadership as they transition through the levels of leadership development, (2) provide an understanding of how women in IT were able to become successful leaders in spite of facing societal and cultural obstacles and barriers, (3) provide insight for organizations to use to attract, develop and retain women in IT, (4) encourage women to pursue IT disciplines at universities and (5) provide insight for organizations to develop strategies for increasing the representation of women in IT which will also significantly narrow the IT labor shortage in the U.S. Significant contributions that are relevant to practitioners, researchers, organizations and policy makers were outlined in this study regarding the leadership development of women in IT leadership roles.

Conceptual Framework

Scholars have studied women in IT leadership roles through the lens of assimilation, social construction, social learning, cultural pluralism, attribution, feminism and gender-based theories (Acker, 1992; Ahuja, 2002; Allen, Armstrong, Reid & Riemenschneider, 2006; Drury, 2008; Ely, Ibarra & Kolb, 2011; Hartmann & Reskin, 1986; Heilman, 2001; Hogue & Lord, 2007; Hoobler, et al., 2011; Lemons & Parzinger, 2008; Lewis, 2005; Nadelson, 1987; Ramsey & McCorduck, 2005; Rutherford, 2001; Sandberg, 2013; Tang & Smith, 1996; Tapia & Kvasny,

2004; Young & Hurlic, 2007). These studies entailed studying women in IT leadership to understand the following:

- If assimilation into the work environment was required for success or whether women could be successful if they maintained or created a contrasting perspective (Hogue & Lord, 2007; Tapia & Kvasny, 2004); How women construct their understanding, significance and meaning in coordination with other individuals through rationalization of their experiences and through developing their own mental model of the social world (Hartmann & Reskin, 1986; Nadelson, 1987; Tang & Smith, 1996).
- The importance and need for women to advocate on their own behalf and stand their ground because of the marginalization, exploitation and oppression of women by men (Acker, 1992; Drury, 2008);.
- The psychological congruence or how fit women are to be an IT leader (Ely et al., 2011; Heilman, 2001; Lemons & Parzinger, 2008; Young & Hurlic, 2007).
- The biological differences between men and women and gender inequalities, biases, discrimination between men and women and the misuse by males asserting power and control (Ahuja, 2002; Allen et al., 2006; Ramsey & McCorduck, 2005; Rutherford, 2001).
- Women perceptions of themselves and others and how others perceive them (Hoobler et al., 2011; Sandberg, 2013), and
- The uniqueness of the cultural male dominated environment and structure that women in IT leadership generally work within (Hunt, Osborne & Schermerhorn, 2005; Lewis, 2005; Tapia & Kvasny, 2004; Young & Hurlic, 2007).

The above listed research contribute to this study because they provide multiple levels of understanding about the experiences about women in IT fields who work in a male dominated

culture and how they view the IT world and how the IT culture contributes to how their leadership abilities are shaped. However, assimilation, social construction, cultural pluralism and attribution are the most salient to this study because they contribute to a deeper understanding of the many facets that women in IT fields experience as they develop leadership abilities when transitioning from one level of leadership to the next.

This study looked at women at different levels in IT leadership through the conceptual lens of Drotter et al. (2011) Leadership Development Pipeline framework (LDP). The LDP model show how individuals and organizations develop effective leadership qualities as transitions occur at the difference levels of leadership, specifically how job requirements at each leadership level change (see Figure 1). According to Drotter, et al. (2011) this framework has been applied to study leadership in over one hundred organizations for executive leadership development. However, the literature review found no evidence to suggest that the LDP framework was applied to study women in IT leadership positions. This study offers a different perspective of women in IT fields through the lens of the LDP framework which explored the lived experiences of women in the context of IT leadership development as they transitioned through the levels of leadership.

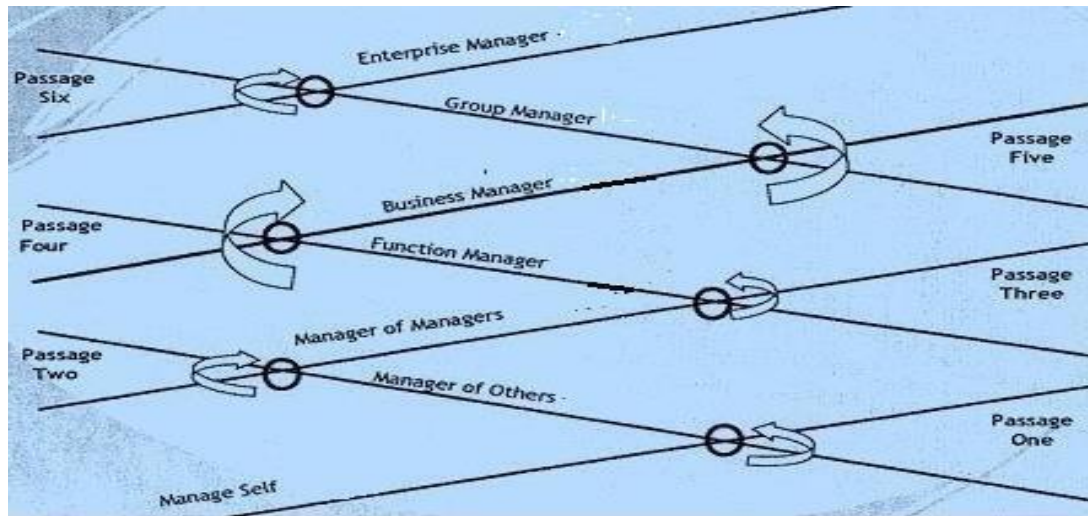
The LDP framework model for this study was developed by Drotter et al. (2011). In this study, the LDP model was used to gain a deeper understanding of the lived experiences of IT women in leadership development at different leadership levels. The LDP model is still considered one of the most salient models used by some of “the best and most successful organizations in the world” (Drotter et al., 2011, p. viii). Using the LDP model, the researcher explored how women in IT leadership positions developed leadership abilities as they moved from one leadership position to the next. The LDP model explored different leadership job

starting from entry level supervisor to high ranking executive positions. Within the LDP model there are six passages which represents the intersection or transition point when an individual move from one level of leadership to the next. The passages are: Passage 1) managing self to managing others; Passage 2) managing others to managing managers; Passage 3) managing managers to functional manager; Passage 4) functional manager to business manager; Passage 5) business manager to group manager and Passage 6) from group manager to enterprise manager (Drotter et al., 2011).

At each job level an individual learns to manage new types of responsibilities. In order to move up a level, individuals should master and pass each transition point. Each job level also requires a different set of skills, the transition of passage points represent readiness to move to the next level through prior preparation. In the LDP model, managerial participants enter at the entry level which is usually the supervisory level and can proceed up to the highest level (passage 6). At each intersection or transition point when moving from one level to the next, a change in (1) skill set, (2) time application and (3) work values are required. A change in skill set requires the individual to develop and utilize different talents and skills to be successful (Drotter et al., 2011). A change in time application governs how the individual works (Drotter et al., 2011). A change in work values is what the individual believes is important thus becoming the primary focus of their efforts (Drotter et al., 2011). While it is not the focus of this study, the LDP model can also help to identify mismatches between an individual's capabilities and their leadership level as well as highlight any bottlenecks an individual might encounter.

Leadership Development Pipeline Model

(Drotter et al., 2011)



The key constructs at each passage are: 1. Change in time application 2. Change in skill set 3. Change in work values

Figure 1. Conceptual Framework

Drotter et al. (2011) believes that in order to be successful at higher levels of leadership, an individual must be able to master the requirements that are needed at each specific leadership level. In order for a leader to be effective, the organization must ensure that at each level all participants receive the appropriate level of training, activities and assignments to sharpen their skills (Drotter et al., 2011). Demonstration of successful transition of each change in time application, change in skill set and change in work values are important components for evaluating a leader's preparedness for the next level of leadership (Drotter et al., 2011).

Key Terms and Definitions

The following terms are defined so that readers have a common frame of reference.

A *Coach*, for the purposes of this study, provides guidance for development, often focused on soft skills rather than technical skills (Catalyst, 2014c)

Gender is the behavioral, cultural, or psychological traits typically associated with the

state of being male or female (www.merriam-webster.com/dictionary/gender). Either of the two divisions, designated female and male, by which most organisms are classified on the basis of their reproductive organs and functions; sex. It is also one's identity as female or male or as neither entirely female nor entirely male (thefreedictionary.com/gender).

Gendered or male dominated organization culture means that organizations and everyday workplace interactions contain normative gender expectations that privilege men and disadvantage women. Images of men's bodies and masculinity saturate organizational processes, trivializing women and contributing to the maintenance of gender segregation in organizations (Acker, 1992).

Information Technology (IT) is defined as the study, design, development, application, implementation, support or management of computer-based information systems, software applications and computer hardware. Information technology also includes any equipment or interconnected system or subsystem of equipment that is used in the creation, conversion, or duplication of data or information (Alford, 2011).

Information Technology Culture is the beliefs and values attributed to Information Technology by a group such as the organization and management (Leidner & Kayworth, 2006).

Job transition is described as the career advancement and transition of an individual who advances up the career ladder from a lower level supervisory position into an executive leadership role (Drotter et al., 2011). For the purposes of this study, job transition occurs when an individual from a lower level management position to higher levels of leadership positions while remaining in the same career discipline such as IT.

Leaders are “agents of change—persons whose acts affect other people more than

other peoples' acts affect them" (Hart, 1996, p. 11).

Leadership is described as "the interaction between two or more members of a group that often involves structuring and restructuring of the situation and the perceptions and expectations of the members" (Bass & Stogdill, 1990, p. 15). Leadership occurs when one group member modifies the motivation or competencies of others in the group (Bass & Stogdill, 1990). In this study leadership development is described as the formal and informal activities and training that is provided by organizations for their employees and leaders to enhance and develop skills needed for job effectiveness and for job advancement (Drotter et al., 2011).

Leadership development in this study is described as the on-going formal and informal leadership activities and training provided by organizations for employees in leadership roles (or aspiring leaders) to develop skills needed for job effectiveness and for job advancement (Drotter et al., 2011). In this study, MBA degrees, management, and executive leadership certificates are considered components of formal leadership development and preparation.

Leadership development pipeline is a blueprint for developing leaders through a planned pipeline series of tests and challenges to prepare future leaders for the next level (Drotter et al., 2011).

Lived experiences are defined as a phenomenon that an individual(s) experience that involves what they experienced, how it was experienced and how they perceived the experience (Moustakas, 1994). Qualitative researchers "aim is to determine what an experience means for the persons who have had the experience and are able to provide a comprehensive description of it" (p. 13).

Male dominated positions are jobs which men have historically and exclusively held such as technology, engineering, etc. (Acker, 1990, 1998).

A *Mentor* is an individual that formally or informally helps a person navigate their career, providing guidance for career choices and decisions (Catalyst, 2014c).

Networking is the exchange of information or services among individuals, groups, or institutions; specifically, the cultivation of productive relationships for employment or business. (<http://www.merriam-webster.com/dictionary/networking>).

A *Sponsor* is a senior leader or other person who uses strong influence to help an individual obtain high visibility assignments, promotions and jobs (Catalyst, 2014c).

Assumptions, Delimitations and Limitations

According to Moustakas (1994) a qualitative phenomenological study allows the researcher to record the participants sharing of their lived experiences, and with all studies, there are assumptions and boundaries. The purpose of stating the assumptions, delimitations and limitations is to provide the reader with an understanding of the scope of the study.

Assumptions

The assumptions for this study are that a) participants who are interviewed will answer questions and share their real life experiences honestly both in an open and in-depth manner, b) participants will be available for all interview sessions and c) participants followed a linear path to their current position. Assumptions are important in order to provide the reader with a “baseline understanding” that describes the boundaries and context for the study in order to compare the results of subsequent work. For example, it may be important to provide pertinent information about the geographical area where the study was conducted that could explain a variation in a future study that is similar (Creswell, 2013; Shenton, 2004).

Delimitations

Delimitations are defined by the researcher regarding what is and what is not part of

the study (Creswell, 2013). Delimitations are important to the reader because they outline the boundaries that the researcher established for the study. The delimitations of this study are a) the participants were selected from only three national organizations (Society for Information Management [SIM], Syssters and EDUCAUSE), b) that individuals at other levels of leadership will not be included as a participant, c) the participants only reside in the Midwest, West and Southwest regions of the U. S. Other regions within the United States were not included in this study due to challenges with scheduling interviews within areas with major time zones differences. It was also recognized that there may be other women performing IT leadership duties that are outside of the targeted population who do not hold formal IT leadership titles.

Limitations

Creswell (2002) describes limitations as “potential weaknesses or problems with the study that are identified by the researcher” and says that “limitations also help readers judge to what extent findings can or cannot be generalized to other people and situations” (p. 253). Limitations are those situations that occur for which the researcher has no authority over (Creswell, 2013). Stating the limitation of the research is important because it informs the reader of possible issues that the researcher may encounter while conducting the study. Possible limitations identified for this study were: a) the participants may not have followed a linear path to their current leadership level, b) the participant may be reluctant to share certain key aspects of their lived experiences which are essential to the study, c) the participants do not feel comfortable providing answers that present themselves in an unfavorable manner, d) there may not be enough people to interview due to the dearth of women in IT middle management and IT executive leadership positions, e) diversity issues may not be addressed because it is not the

focus of this study, and f) the participants may not have worked at all levels on the leadership career spectrum.

Chapter Summary

This chapter introduced the background, problem statement, research question, purpose, significance of the study, key terms and definitions, the research question and scope for the study on the lived experiences of women in their development as leaders in IT fields. This study used the conceptual lens of Drotter, et al. (2011) leadership development framework. Chapter 2 provides a review of literature by other scholars on the subject, their findings, recommendations and a chapter summary.

CHAPTER 2

LITERATURE REVIEW

The purpose of this qualitative phenomenological study was to explore women's lived experiences in their development as leaders in IT fields. Little is known about the nature of the informal and formal quality of leadership development experienced by women in IT as they move from one level of leadership to the next. This study examined the lived experiences of women in IT leadership roles to understand why only a few women reach executive leadership levels in IT.

This chapter provides a review of the literature on the background, experiences and barriers of IT women in leadership roles on their path to IT executive leadership. One way to look at IT women as they move through the stages of leadership development is through the lens of Drotter, et al. (2011) leadership development conceptual framework looking at change in time application, change in skill set and change in work values as IT women move up the leadership level. For this study, the scholars in the literature review provided evidenced based findings on topics relating to this study to support their arguments.

The review of literature consisted of 155 articles and documents and 57 books that were relevant to this study. Search engines from the University of Nevada Las Vegas library and were Google Scholar to retrieve journal articles, manuscripts and other documents. Studies from the Department of Labor (DOL), Department of Education (DOE), the Office of Science and Technology Policy (OSTP) and the National Science and Technology Council (NSTC) were also reviewed. In the literature reviewed, some of the researchers took a qualitative research approach using interviews, surveys, focus groups, observations and artifacts. Other scholars used quantitative research methods to test their hypotheses and some used a mixed methods

research approach. Themes that emerged from the critical review of literature include women in information technology leadership, information technology, IT culture, societal attitudes towards women in IT, educational and workplace challenges, gender and organization cultural barriers, lack of role models and mentors, lack of leadership development opportunities, leadership development, and IT women and leadership development. Following is the review of literature that is relevant to this research.

The DOL reported that women account for more than 50% of the workforce (BLS, 2014). The BLS reported that there is a technology labor shortage and that the gap is expected to widen significantly by 2018 (BLS, 2014). They also report that women and minorities are underrepresented in IT fields. A study conducted by the NCWIT found that females entering technology fields at universities have declined by nearly 80% since 2000 (NCWIT, 2009). They also found that women are not entering IT disciplines at universities and at the same time women are exiting IT careers in the workplace. Furthermore, women in IT who are in leadership are exiting at the mid-management level after a career investment of 15 or more years on the job (Ashcraft & Blithe, 2009). Gender, culture, social, economic, political implications and exclusion are significant factors contributing to the demise of women in IT and in IT leadership (Acker, 1992; Ashcraft & Blithe, 2009; Hartmann & Reskin, 1986; Kvande & Rasmussen, 1994; Nadelson, 1987; Tapia & Kvasny, 2004; Ramsey & McCorduck, 2005; Rutherford, 2001).

Within the past decade, scholarly research has been presented on the need for organizations to recognize and address female gender differences in leadership. Gender differences and gender segregation cause social values and beliefs that foster ideas of unequal access for certain groups such as women suggesting that it also impact these individuals when

they become leaders (Hartmann & Reskin, 1986). Research has shown that males and females are socialized differently and are influenced by their role models such as parents, teachers, counselors, clergy, etc. which may account for why women may have leadership challenges in some fields especially in male dominated fields like IT (Nadelson, 1987). Tang and Smith (1996) argue that women, at an early age, are socialized away from careers that are traditionally considered as male dominated fields such as computer technology and that it may account for why there are fewer women in IT. Freeman and Aspray (1999) found that women in IT are underrepresented in leadership development and in the leadership pipeline. They also found that gender differences and masculine cultures are obstacles that IT women face in public and private sector organizations. Lemons and Parzinger (2001) in their study of why women in IT leadership positions exit the field found that women face glass ceilings resulting from educational challenges, work/life balance, sociological factors and organizational structure and cultures.

According to Rutherford (2001), culture provides a roadmap and set the tone for values, beliefs, language and actions of organizations. The author found that organizational cultures that are male dominated affect gender equality and that the masculine behaviors are embedded within the roots of the organization and can hinder the progression of women to leadership. Other scholars studying why women IT leaders exit their careers attribute the exodus to gender differences including discrimination, stereotyping, the lack of access to formal and informal networks and the overall lack of promotions and leadership development opportunities (Ahuja, 2002; Allen et al., 2006; Ashcraft & Blithe, 2009).

Scholars have also found that the barriers and cultural factors that women in IT face have social, economic and political implications (Acker, 1992; Ashcraft & Blithe, 2009;

Hartmann & Reskin, 1986; Kvande & Rasmussen, 1994; Nadelson, 1987; Ramsey & McCorduck, 2005; The Voice of Middle Older Women [OWL], 2012). Acker (1992) argued that organizations are gendered with processes that support their structure. Gendered processes mean that “advantages and disadvantages, exploitation and control, actions and emotions, meaning and identity are patterned through, and in terms of, distinctions between male and female, masculine and feminine” (p. 146). In gendered organizations, male dominance is perpetuated further dividing areas into male and female continuously reproducing and rewarding male dominance (Kvande & Rasmussen, 1994). Greenhaus et al. (1997) posits that women in male dominated positions such as IT are less likely to marry and have children than their male colleagues. This indicates that women in IT fields may believe that it is difficult to balance family life and work life. Also, in many organizations, Tapia and Kvasny (2004) found IT to be a male dominated culture and in IT, women are generally paid less than men for comparable positions (American Association of University Women [AAUW], 2012).

From an economic perspective, the AAUW (2012) reported that IT women earn on average 77 cents to every dollar earned by men. According to OWL, IT is one of the highest paying career fields and could provide the basic needs and a better quality of life for women. Due to a lifetime of reduced income women’s retirement savings are significantly lower than men and women are more likely to live below the poverty line once they retire (OWL, 2012). Increasing representation of women and female leaders in IT can provide a higher quality of life for women and can also narrow the gap in the IT labor force shortage. To increase the representation of women in IT, organizations need to create a workplace environment that is conducive for women to be successful by removing organizational structures that hold women back (Anita Borg Institute [ABI], 2014). Kvande and Rasmussen’s (1994) case study of women

in engineering [technology] at six large Norwegian companies found that organizations are gendered political systems. Kvande and Rasmussen's (1994) research of IT women in male dominated organizations showed that men systematically had better opportunities over women including leadership opportunities.

Igbaria and Baroudi (1995) found that women in IT were viewed as less promotable than men. Some scholars report that in order for a woman to be successful in male dominated cultures, females must "masculinize or Anglocize" to conform (Tapia & Kvasny, 2004, p. 88). Ramsey and McCorduck (2005) studied the exclusion of women from IT executive management and found that gender bias and discrimination, lack of access to formal and informal networks and leadership development opportunities that could assist in enhancing women leadership skills were barriers. These barriers also deny women in IT the useful insights into politics and power inside the organization such as policy and decision-making (Ramsey & McCorduck, 2005). Additionally due to many women in IT leadership experiencing exclusion and opting out of their careers has led to a low number of role models and mentors for IT women (Ashcraft & Blythe, 2009). The authors also found that the lack of role models and mentors are contributing factors to women not pursuing IT studies and women exiting IT careers. NCWIT reported that the departure of women from IT leadership positions is also due to the obstacles that hinder them from transitioning through the leadership development pipeline to executive leadership levels (Ashcraft & Blithe, 2009). Baumgartner and Schneider (2010) found that gender perception for women in the IT workplace can hinder access and progression for promotions to higher level positions and to political networks.

Women in Information Technology Leadership

Women employment in the work force has steadily been rising since 1925 (BLS, 2014; Gordon, 2014). Valerio (2009) found that over the years more women began to work in traditionally male dominated jobs such as IT with excellent performance. According to Dunn (1998) and Barnett (1993) during the civil rights movement, women built coalitions, fought for the right to vote and the right for equal access and opportunity. However, as more and more women entered the workplace, women discovered that their struggles were not over (Dunn, 1998). Women working in IT received minimal training, had limited role models and mentors. Males who could provide assistance believed that women in IT were intruders (Kvande & Rasmussen, 1994) and believed that they should not be held accountable for training and coaching women (Connors, Hickman & Smith, 1998; Kvande & Rasmussen, 1994). Women in IT leadership were scrutinized more so than others, subjected to stereotypes, discrimination, sexual harassment and verbal and physical abuse (Dunn, 1998; Hoobler et al., 2011; Ramsey & McCorduck, 2005). Despite these obstacles, eventually a few women achieved IT executive leadership roles (Ramsey & McCorduck, 2005). However, many women in IT including those in leadership positions quit (Ashcraft & Blithe, 2009).

The National Center for Women in Technology reported that the ratio of women exiting technology careers is nearly a 4:1 ratio over men, and many women leave from positions at the middle management and executive leadership levels (Ashcraft & Blithe, 2009). Furthermore, according to the U. S. Department of Labor the gap will grow significantly wider by 2018 if new pathways are not found to attract and retain females in technology careers (BLS, 2014). Scholars studying the departure of women in information technology leadership in the workplace attribute it to social beliefs and attitudes that foster stereotyping, gender bias,

discrimination, harassment, exclusion, segregation, lack of role models and mentors, lack of opportunity for advancement, unfriendly work policies and lack of access to leadership development both formal and informal (Ahuja, 2002; Alford, 2011; Allen et. al., 2006).

Information Technology

Individuals in IT leadership roles are responsible for managing the technology operations which is comprised of technology assets including technology policies and IT personnel. According to Subramaniam and Burnet (2006), “IT workers are those persons engaged primarily in the conception, design, development, adaptation, implementation, deployment, training, support, documentation, and management of IT systems, components, or applications” (p. 44).

Historically, all IT leadership positions have been held by men, and information technology is still a male dominated field. Career progression and advancement to leadership roles have been sluggish and continue to be problematic for women in IT. Women in lower level IT management positions are considerably less than men (Katz & Salaway, 2004). Statistics indicate that for every 10% increase in lower level management positions, which are filled by women, the odds of having a woman at the top increase by less than two percent (Blum, Fields, & Goodman, 2003).

IT Labor Shortage. Scholars report that there is a huge gap between the number of IT workers that are needed and the number of IT workers that are skilled and available. This gap has created an IT workforce pipeline problem which impacts innovation and productivity in the U. S. (Ahuja, 2002; Bolochover, 2012; Dunn, 1998; Lemons, 2003; Kvande & Rasmussen, 1994; Tapia & Kvasny, 2004; Wentling & Thomas, 2009; Valerio, 1990). At the current rate, only about half of the potential IT talent pool is being utilized and consists

primarily of men (Balcita, Carver & Soffa, 2002; Dreher, 2003; NCWIT, 2009, 2014). These statistics are disturbing because as the world becomes more and more computerized there is a higher demand for IT workers and the technology that we build should reflect the diversity in the population that it serves (NCWIT, 2014; Wentling & Thomas, 2009;).

Although the rank that women achieve in organizations has grown exponentially over the last decade, leadership in the IT field is still primarily male-dominated (Hewlett & Luce, 2005; NCWIT, 2014; Swerdlow, 1989) and attracting and retaining women and leaders in IT positions is challenging (Carayon, Hoonakker, Marchand, & Schwarz, 2003). This trend continues even though a monumental amount of research and anecdotal evidence indicates that organizations that develop the talents of their female employees and leaders and value their contributions will be among the most successful organizations (Hewlett & Luce, 2005).

Academia, public and private sector organizations are experiencing major losses of talent, creativity and innovation in the workforce because of the lack of women in IT and IT leadership (Ashcraft & Blithe, 2009; NCWIT, 2014). This loss impacts not only women but also the U.S. economy in global spaces. The increase of women in IT and IT leadership roles can significantly narrow the IT labor gap and has the potential to change the world's economy. Wentling and Thomas (2009) reports that the shortage of "IT labor could cost the U.S. 4 billion dollars annually in lost production" (p. 27). Now more than ever is it critical to remove cultural barriers and increase the representation of women in IT and in IT leadership roles.

IT Culture. Stereotypes, a hostile work environment and a masculine culture continue to be road blocks for the development of women IT leaders (Ashcraft & Blithe, 2009; Ahuja, 2002; Rutherford, 2001; Swerdlow, 1989). Although studies show that female and male leaders in IT have the same level of competence, many organizations generally perceive women as less

knowledgeable and less worthy of investment (Hoobler et al., 2011; Sczesny, 2003). Tapia and Kvasny (1994) describe the IT culture as having characteristics that are different than and “unique to the industry and unique to [white] males” (p. 87). These descriptions include “individualistic, anti-social, competitive, male dominated, has in-groups and out-groups and usually excludes women” (p. 87).

The IT culture is also categorized as a male dominated subculture (Young & Hurlic, 2007) and such cultures have a strong resistance by males to change their attitudes towards women (Kvande & Rasmussen, 1994). In this environment, women are selected at much lower rates for promotions to [executive] leadership positions (Ashcraft & Blithe, 2009; Ely, et al., 2011; Kvande & Rasmussen, 1994; Lemons & Parzinger, 2001). Because of these barriers women oftentimes quit, rather than remain and fight (Ashcraft & Blithe, 2009). The action of taking flight may reinforce the perception by men that women are not suited for IT leadership and signal to younger women that there is no place for women in IT and IT leadership (Ashcraft & Blithe, 2009; Ely et al., 2011). Taking flight also perpetuates the situation and creates a revolving door making women in the IT leadership pipeline scarce (Dunn, 1998; Sandberg, 2013). If workplace attitudes and barriers towards women and trends continue with women exiting IT and women not pursuing technology studies in academia, it is possible that there will be virtually no females in the field of information technology in the U.S. (NCWIT, 2015).

Attitudes and Behaviors Towards Women in IT. Societal attitudes about women working in the field of IT continue to identify men with technology (Lemons & Parzinger, 2007). Women leaders working in male dominated positions such as information technology still face many obstacles including the lack of leadership development opportunities (Ely et al., 2011; Ramsey & McCorduck, 2005). The barriers that women in IT leadership face are

monumental and continue to force many women out of IT leadership positions and discourages other women from pursuing not only an IT leadership role but any position in IT (Armstrong, Nelms, Reid & Riemenschneider, 2011; Allen, et al., 2006). The Center for Work Life Policy (2011) found that 74% of technical women reported that they love their work but that a shocking 56% of them leave after five or more years of experience. Additionally many women in IT mid-management and IT executive leadership exit after obtaining 15 years or more of experience. This is more than double the exit rate for men (NCWIT, 2009). Women vacating technology leadership positions and women deciding not to study technology have grown to epidemic proportions (Ashcraft & Blithe, 2009).

Yates (2001) offers another perspective on the barriers and obstacles women in nontraditional fields encounter suggest that women in the workplace can resolve their own issues as they occur instead of letting them pile up, and becoming overwhelmed and quitting. Glazer-Raymo (2001) perspective is that women in IT leadership do not have the power to improve their own situation and men have to advocate on their behalf and make the changes for them.

Sandberg (2013) raises the issue that, it is women who exacerbate their own problems by not speaking up for themselves and accepting the status quo. The author also believes that women can do more to change their own situation and the organization's perspective of them, if they would become more engaged by leaning in and not behave so disjointedly from their male counterparts on important business issues. IT women need to do more for themselves and make their voices stronger and louder, addressing women workplace issues including those barriers relating to development and the leadership pipeline (Sandberg, 2013).

In an effort to attract and retain IT women, some organizations have attempted to resolve barriers that women in IT fields face by offering flexible work schedules, work from

home options and “on and off” ramp programs (Dunn, 1998, Hewlett & Luce, 2005, p. 11). However, these accommodations have not garnered the desired results of attracting and retaining females in IT positions (Dunn, 1998) nor does it allow for the effective development of women in IT leadership. Researchers believe that although these accommodations are important, overall they are insufficient. Hoobler et al. (2011) in a quantitative study on women managerial aspirations in a global Fortune 500 company located in the mid-western part of the U. S. found that the opportunity for leadership training and development and high visibility assignments for women is significantly less when compared to men. The authors also purport that women receive more interruptions (childbearing, family care, etc.) which effects how they are perceived. There is a significant relationship between gender and management’s perception of motivation which is tied to the amount of leadership development one receives. This suggests that women are perceived to be less motivated than men because of their family life obligations. They are not perceived as leadership material and are more likely to receive less leadership development than men (Hoobler et al., 2011).

The lack of a comprehensive leadership development strategy for women working in non-traditional leadership roles such as information technology confirms that organizations have not given sufficient attention to opportunities such as leadership development, promotions and the needs of IT women (Ely et al., 2011; Hoobler et al., 2011). To illustrate this point, when Satya Nadella, Microsoft CEO (during an interview at a women’s technology conference promoting women in IT) was asked how women should broach the subject of a promotion said that women should not ask for a promotion, but should wait for karma to happen and trust the system (Rigby, 2014). It is this kind of thinking and mindset by men that is harmful to women in IT and to the economy especially since research has shown that “men are eight times more

likely to negotiate a [higher] salary than women (Babcock & Laschever, 2007). It is these kinds of beliefs and attitudes towards women in IT that influence women not to pursue IT studies and to exit lucrative IT careers. This attitude towards women is also a huge factor in widening the gap in the leadership development of IT women and in preventing them from promotional opportunities and achieving executive leadership (ABI, 2014; NCWIT, 2009).

Educational and Workplace Challenges

According to McWhinney (2013), in 2008, women received nearly 60 % of all undergraduate degrees but represented only about 18 % of all computer and information sciences undergraduate degrees. The report also stated that since 2000, there has been nearly an 80% drop in the number of incoming undergraduate women enrolling in computer related disciplines. The American Public Media Marketplace (2013) reported that in 2000, women received nearly 30% of the computer science degrees, but by 2009, that number had drastically fallen by more than 50%.

The President's Commission on the Status of Women on jobs and opportunity in the 21st century conducted by the DOL (2014, p. 26) stated the following: Over the 50 years since President Lyndon Johnson launched the War on Poverty, women have made unprecedented strides in education to the point where they now outnumber men at every level of the higher education ladder. In 1964, only 40.7 percent of women enrolled in college after graduating from high school. Today, that figure is 70.2 percent, and there are roughly 240,000 more women in college than men. About 60 % of all Associate's and Master's degrees go to female candidates, and the ratio is almost the same for Bachelor's degrees.

Women recently surpassed men in doctoral degrees awarded as well. All in all,

the story of women's access to higher education and their graduation rates in recent decades is one of remarkable success.

However, these statistics drop significantly for women in the IT profession for both education and in the labor force, and especially in IT leadership positions (Ashcraft & Blithe, 2009). According to Heilman (2001), although women usually have more formal qualifications than their male counterparts, they are stifled by a "lack of fit" mentality preventing them from promotional opportunities (p. 660). Additionally, organizations have a "think leader, think male" mindset that view women as less worthy of organizational leadership and development (Sczesny, 2003, p. 353). This mindset is threatening and detrimental to women in IT leadership (ABI, 2013).

Researchers believe that the fundamental challenges women face in leadership comes from the mismatch between qualities traditionally associated with male leaders but not traditionally associated with women (Eagly & Carli, 2007; Hatch & Cunliffe, 2006; Trauth & Howcroft, 2006). A 2007 study by Catalyst argues that "the traditional assertive, authoritative and dominant behaviors that people link with leadership tend not to be viewed as typical or attractive in women" (as cited in Nohria & Khurana, 2013, p. 378). The statistics highlight the barriers that women in IT leadership face in obtaining and navigating leadership development and as stated by a former female IT technology leader who was the CEO of Hewlett-Packard, Carly Fiorina, relative to her own experiences, "traditional gender expectations and practices also shape people's experiences even after they reach the top" (Nohria & Khurana, 2013, p. 378). To illustrate this point consider an excerpt from Nohria and Khurana (2013) investigated by Washington Post staff writer Shankar Vedantam that wrote the following:

Reactions to Hillary Clinton's candidacy in the 2008 Democratic presidential

nomination are illustrative. She has been criticized roundly for lacking people skills and opposed by online groups bearing such names as: Life's a B*tch, Don't Vote for One...Anti Hillary Clinton '08' and "Hillary Clinton Is a Man and I Won't Vote for Him". Yet when she has publicly expressed caring and compassion, people have questioned both her authenticity and her toughness. "Can Hillary Cry Her Way Back to the White House?" asked New York Times Op Ed columnist Maureen Dowd (2008:A21). Clinton is in good company.

Reflecting on the 'myth of the iron lady'...reflecting on a pattern in the phrases used to describe many countries first female leaders: England's Margaret Thatcher [was called] 'Atilla the Hen', Golda Meir, Israel's first female prime minister was [referred to as] 'the only man in the cabinet'. Richard Nixon called Indira Ghandi, India's first female prime minister, 'the old witch'. Angela Merkel the Chancellor of Germany, has been dubbed 'the iron frau'. (p. 378)

This represents only a few examples of the challenges women endure and how women performing in traditional male leadership roles are met with less respect than men holding comparable positions (Fuchs, Heilman, Tamkins & Wallen, 2004). These women leaders are pioneers, powerful and great leaders in their countries and served as role models for other women. However, their contributions were marginalized by men in leadership positions which could shape how women see themselves and how others perceive them (Rutherford, 2001).

Women in leadership positions in traditionally male dominated jobs, especially when they are competent and their performance is excellent are not well liked compared to men who hold and excel in the same positions. This holds true in the academia, public and private sector organizations (Heilman & Okimoto, 2007).

Researchers studying the phenomenon of women in leadership discovered that (due to gender quota requirements) government entities have increased women leaders in the political and public sector. However, women in leadership still lag far behind in both the public and private sector and in elite professional settings in the U. S. and in other countries (Dahlerup, 2013; Eagly & Carli, 2007; Hofstede, 2001). The European Commission 2007 report shows that, “in Europe, women account for about a third of managerial positions but only 3 percent of CEOs” (Nohria and Khurana, 2013, p. 378). Hofstede (2001) confirms that women tend to face similar leadership issues in countries with strong masculine cultures such as Japan, Austria and Venezuela where men are expected to be more powerful and forceful and women more meek and cultivating. The National Association of State Chief Information Officers website lists only four women out a total of 50 State chief IT executives in the U. S. (NASCIO, 2015). Scholars attribute many of the issues that women in IT executive leadership face is due to glass ceilings and gendered organizational structures that benefit men (Acker, 1992; Kvande & Rasmussen, 1994; Lemons & Parzinger, 2001).

Workplace

Most cultures hold a masculine concept of leadership believing that leadership is best suited for men who are critical thinkers, “decisive, assertive and independent” (Ely et al., 2011, p. 477). They also hold the belief that women are “friendly, unselfish and nurturing” and that these qualities are not considered effective leadership traits (p. 477).

Gender and Workplace Cultural Barriers. Wentling and Thomas (2009) interviewed 25 women from different Fortune 500 companies to examine the workplace culture that hinder leadership development for IT women. The authors advocate that societal factors such as gender stereotypes are key influencers affecting IT women and not biological factors. These stereotypes

can lower feelings of acceptance for women and hinder their chances for career advancement.

The authors found that within the IT field traits are collected and defined based on the gender of the individual which influences the overall culture of the organization.

Kvande and Rasmussen (1994) studying men in male dominated engineering organizations found that gender beliefs spill over into the workplace environment and is inherent in the structure of the organization. The researchers classify these types of organizations as gendered organizations which operate in a vicious cycle against women. Such gender beliefs influence the structure through policy and procedures to reinforce and strengthen the norms of the gendered organization. The masculine norms and forms embedded in gendered organizations are what Kvande and Rasmussen (1994) call gendered political systems. Kvande and Rasmussen (1994) revealed that systems of organizational politics occur when there is competition for organizational rewards. This gendered political system causes barriers for women in IT leadership. Women in IT leadership working within a gendered political organizational system are faced with limited access to the good old boy network. Within this type of organizational structure women are also denied the ability to access power and decision making networks thus hindering them from access to opportunities and promotions (Kvande & Rasmussen, 1994; Wentling & Thomas, 2009).

James (1998) argues that organizational structure is created in the image of men suggesting that organizational cultures present more harmony for male leaders and discord for women in leadership. Dominant male influence on an organization's culture impacts gender equality and in many cases gender bias is institutionalized within the culture (Rutherford, 2001). The author purports that although each organizational culture is different, a common theme found was that women appear to be devalued, diminished and their performance underrated.

According to Rutherford (2001), organizational culture can be exclusive. He also argued that women are excluded from formal, informal, social and political networks and from those activities that could provide them with insight into the power and decision making process. The author found that male dominate groups are known to maintain control by withholding resources and information from women because they deem women as inferior and not worthy. Women in high level positons are victims of this behavior and face both formal and informal barriers (Rutherford, 2001). Researchers studying gender and language in organizations found that organizational culture also drives language based gender expectations, that the three prevalent types of languages (sports, sexual language and military) all have masculine contexts and generally left women out of the base language of the organization resulting in exclusion of women in a variety of workplace initiatives (Bate, 1990; Rutherford, 2001).

Hunt et al. (2005) postulates that a prevailing or dominate culture, subcultures as well as countercultures live within each organization. Tapia and Kvasny (2004) found that IT is unique and possess the characteristics of a counterculture in terms of rebellion against women. They categorized IT as a masculine controlling culture made up primarily of white men. These controlling forces create expectations of gender control through their actions; these attitudes enter into the workplace and life away from work—creating and developing subcultures (Lewis, 2005).

Young and Hurlic (2007) suggest that subcultures within the organization hold a unique set of beliefs and behaviors that can be different from the rest of the organization. Young and Hurlic (2007) argue that in sub and countercultures there is a resistant to the values and beliefs of other surrounding cultures. They also found that gender plays a role in subcultures and

countercultures implying that IT women struggle with countercultures that are unique inside IT departments and the surrounding male dominant culture external to IT but inside the organization.

Hofstede (2001) found that organizations that had predominately masculine cultures viewed work goals, career advancement and earnings, powerfulness, forcefulness, decisiveness and marketing oneself as a valuable asset as a priority for successful leadership. Additionally, although in feminine dominate cultures, work goals were also a high priority, however interpersonal relationships, service and preserving the physical environment, work/life balance and other quality of life concerns were also held in high esteem. Forcefulness, powerfulness and marketing themselves were secondary and in many cases avoided. Women in leadership exhibiting these traits were met with ridicule or scorned (Hofstede, 2001).

Hogue and Lord (2007) argue that organizations have not addressed the cultural attitudes towards women or the structural barriers that cause problems for women in the leadership development pipeline. The tradeoffs and uniqueness of women leaders in male dominated roles are not strategically addressed or integrated within the leadership development pipeline (Nohria & Khurana, 2013). According to Hogue & Lord (2007) women in IT leadership continue to face biases on multiple levels within organizations integrated and disguised within the framework of leadership such as (a) the structure of the paths to management and leadership positions, (b) the ways in which women perceive their own image as a leader, (c) how they must behave and what they have to do to get the leadership position, and (d) what has to be done to be successful not only in job performance but how they interact with their male counterparts once they get the job.

Many women in IT leadership believe they have to become accepted by the ‘good old

boy' network in order to be viewed as successful (Hogue & Lord, 2007). Women in [IT] leadership roles believe that they have to balance competence and success with being liked in male dominated cultures (Nohria & Khurana, 2013). The authors also believe that women in [IT] leadership understand that as they navigate the leadership pipeline, that at each level their qualifications and accomplishments are called into question. This is not true of their male counterparts who are promoted based on the characteristics and potential leadership qualities that they are perceived to have and not for their accomplishments (Dunn, 1998).

The lack of women in IT leadership positions is prevalent in government, academia and organizations across different industries. This has become a continued topic of discussion under the heading of science, technology, engineering and math [STEM] (DOE, 2014; NSTC, 2013). The U.S. government, academia, public and private sector organizations have attempted to close the gap by developing anti-discrimination laws, policies and programs to address the underrepresentation of women in STEM [IT] and in IT leadership roles (Bagchi-sen, Rao, Sangmi, & Upadhyaya, 2010; DOE, 2011; NSTC, 2013) .

Claims of Discrimination. Research done by James and Wooten (2006) in their study of 76 court cases show that many organizations face workplace discrimination lawsuits because of gender, race, age, religion, sex, disability and any of the categories protected under the 1964 Civil Right's Act; this also includes women in IT fields (Kunce & Meyer, 2014). Organizations treat charges of discrimination as institutional threats and go into crisis management mode to protect the organization from public scrutiny and criticism, to protect its reputation and image.

Sometimes, this also results in vigorously protecting the offender, especially if the offender is a high ranking official. Organizations pay more attention to class action lawsuits

brought by multiple individuals than they do by a single person because of the media coverage that it get (James & Wooten, 2006). However, they are usually swift in getting a resolution to a single employee claim(s) of workplace discrimination. They either inform the employee that the claim is justified or not justified; sometime this is the beginning of retaliation by management (Kunce & Meyer, 2014). However, oftentimes the complaint is remedied with an out of court settlement agreement that comes with a stipulation that the employee must resign from the organization (James & Wooten, 2006; Kunce & Meyer, 2014). There is generally a nondisclosure agreement stipulating that the employee is not to discuss the settlement with anyone, and they are not to make disparaging remarks about the company or any of its officials. Another element of the settlement agreement is that the organization usually states that they are not admitting to guilt of any kind but just want to put the situation behind them (James & Wooten, 2004).

Unfortunately, in these situations, it is the employee that is at a disadvantage because in many cases, the settlement is lower than if they had went public, and sometimes they find difficulty finding re-employment. Many times employees opt to settle because of the astronomical cost of attorneys and court fees, and the stressful situation that they have already been experiencing. They just want relief and want to move on with their lives. Organizations want to avoid court proceedings because it is costly and because public court proceedings can tarnish their image, cause them to lose trust with their employees and incite a class action suit if it is found that the behavior is widespread throughout the organization (James & Wooten, 2006).

Lack of Role Models and Mentors. LinkedIn surveyed 1,000 women and found women in leadership roles have very few role models internal or external to the organization

(Huffingtonpost, 2011). It is important that females entering technology careers and/or studying technology disciplines have female role models and mentors in IT (McKinney, Wilson, Brooks, O’Leary & Hargrove, 2008). The lack of role models and mentors may discourage females from entering technology careers and discourage females already in IT from pursuing or remaining in leadership roles (Katz et al., 2004). Maxwell (1993) argues that the lack of role models and mentors are critical issues because “what people need is a model to see and 89% of what people learn comes through visual stimulation, 10% through audible stimulation and one percent through other senses” (p. 38). Mentors and role models have a significant influence and can encourage women to pursue technology careers, help younger IT female professionals remain in the field and help to develop future generations of women IT workers and women in IT leadership roles (Katz et al., 2004).

Based on research organizations have spent decades honing and refining leadership skills, developing succession strategies and other leadership development initiatives typically designed by men for men (Acker, 1990; Ely et al., 2011; Hewlett & Luce, 2005; Kvande & Rasmussen, 2004). Research has shown that role models, mentors and coaches were their immediate supervisor and/or a sponsor at the executive level; many of these role models also existed at a distance from outside the organization (Ely et al., 2011; James, 1998). James (1998) suggests that leadership development programs have produced thousands of male leaders. For males, this is important because it provides role models that showed them how decisions get made, how to handle difficult situations, how to act and think like a leader, and what it takes to be successful as a leader. This practice of developing male leaders is still in effect today; every day and throughout each day men can visually see, hear and observe males in leadership positions —U. S. presidents, CEO’s, senators, lawyers, physicians, city managers,

the clergy, TV newsmen, their fathers and other male relatives and friends (James, 1998). Men obtain leadership roles due to support from male role models and male leaders both internal and external to the company which perpetuate the masculine culture (Ramsey & McCorduck, 2005).

Although, in a few cases, males have served as role models and mentors to women, research shows that individuals are more comfortable with someone like them and with someone who can identify with them as their role model or mentor (Maxwell, 1993; Ramsey & McCorduck, 2005). Women role models, mentors, coaches and sponsors in many cases are not available to women in IT leadership due to the shortage of women in leadership positions in IT (Ashcraft & Blithe, 2009; Hoobler et al., 2011). Consequently, women in IT leadership continue to leave the job and women at universities continue to avoid pursuing IT studies and careers (NCWIT, 2009). The shortage of women in IT at the technical and leadership levels is discouraging. Scholars attribute a major component of the lack of women in IT leadership is due to the lack of access and opportunity for leadership development, high visibility assignments and other workplace issues that hinder their career progression (Acker, 1990; Kvande & Rasmussen, 1994; Lemons & Parzinger, 2001; Wentling & Thomas, 2007/2009).

Lack of Development Opportunities. Studies have shown that little attention is paid to the development of women IT leaders because organizational leaders believed that it was a waste of time to invest in females since they would eventually get married, have children and leave (Ashcraft & Blithe, 2009; Valerio, 1990). Ramsey and McCorduck (2005) argue that women achieve an equal or higher level of education than men, do superior work but are not given the same respect, credit and opportunities as their male counterparts. A Fortune 500 study by Stroh, Brett and Reilly supports Ramsey and McCorduck (2005) stating that although IT women had similar education to men, organizations were still convinced that the leadership

development of men would be a better return on investment than investing in women (as cited in Hoobler, et al., 2011).

Based on the literature many women in IT leadership struggled with the decision to accept the status quo, fight or take flight and many left their leadership positions; they either returned to non-leadership roles or left the workforce altogether (Ashcraft & Blithe, 2009). IT women who remained in leadership roles faced more barriers, endured more hardships and encountered more scrutiny than their male counterparts (Ashcraft & Blithe, 2009; Ely et al., 2011). In meetings, Kvande and Rasmussen (1994) reported that male leaders took over female presentations undermining their competence and credibility as a subject matter expert and as a leader. A woman IT executive shared a past experiences that during meetings she was ignored and belittled and that her ideas were oftentimes overlooked but when a male leader put forth the same idea, it was then considered a good idea (personal communication, Robyn Render, April 10, 2010). Some women also report that they were left out of the decision making process including important decisions about their department (Ashcraft & Blithe, 2009; personal communication, Robyn Render, April 10, 2010). According to a Catalyst study, these decisions many times were made behind closed doors at establishments where generally women excluded, prohibited or unwelcomed (Andrews, 2012). Based on critical review of the literatures the barriers and obstacles that IT women in leadership face suggest foundational leadership development inadequacies for women.

Leadership Development

According to Drotter et al. (2011), organizations rely on employees to fulfill the operational activities required to meet its mission and goals. Within organizations people are led by an individual who is referred to as a leader or a person in a leadership role. In order for a

leader to develop the required skills many organizations offer leadership development training to enable the individual to successfully lead their group. This training can be both formal and informal. The authors explain that leadership development training conducted by most training organizations primarily focuses on performance to assist individuals in mastering many competencies including fiscal administration, personnel management, communication, strategic planning, etc.

Some scholars believe that classroom leadership training is inadequate and that true leadership development comes only through experience which is doing the work of leadership and taking on challenging assignments which motivates the individual and sharpens leadership skills (Donnell & Hall, 1980; Holt, 2011). Hoobler et al. (2011) wrote that challenging assignments increases employee capabilities and prepares them for managerial positions. Additionally, effective leadership development offers numerous resources such as developing a written personal leadership development plan, executive coaching, mentoring and higher visibility within the organization mainly due to the management of visible and oftentimes critical assignments (Drotter et al., 2003). William J. Rothwell (informal lecture at UNLV, August 30, 2013) stated that 90% of successful individuals in organizations are those who have a career strategy, mentors, coaches, choice assignments and visibility in the company. Male leaders traditionally have been given the best choices of assignments many of which carried high visibility within the organization. These assignments led to promotion and other opportunities for men suggesting that organizational structural and cultural barriers continue to prevent women from moving upward into executive leadership positions (Alford, 2011; Valerio, 2009).

Women in IT leadership are more likely to advance their careers and be successful

when organizations invest in developmental and supportive systems designed with the unique needs that are required for women in IT leadership (Gordon, Marckinus, & Whelan-Berry, 2007). Through organizational leadership development efforts, individuals [women] can draw on their experiences, skills and education while performing their job and enhance the opportunity to create career opportunities (Hoobler et al., 2011). Tichy (2012) suggests an informal train the trainer approach for leaders to train and coach other leaders as an alternative leadership development proposition opposed to a more formal or structured leadership development approach.

Although leadership development strategies and training have been more effective for women in some nontraditional fields such as medicine and law, this has not been the case for women in IT leadership (McCorduck & Ramsey, 2005). Information technology is still a male dominated field and the IT culture has not been welcoming to the concept of developing women as IT leaders.

Gordon et al. (2007) contends that more circles of support are needed to support career advancement and to provide emotional support for women leaders. Cheung and Halpern (2010) argued that women in IT leadership need more than developmental and supportive systems in the workplace. The authors suggest that another key element for workplace success is connected with their life outside of work and that a village of support is required. It takes an integrated network of various systems to help support the personal and workplace needs of women in IT leadership (Baumgartner & Schneider, 2010; Cheung & Halpern, 2010; Panteli, 2012).

Ely et al. (2011) found that leadership development also includes the identity work that is performed by a leader. The authors wrote that as individuals expand their leadership activities

their leadership role also evolves and take on a greater sense of purpose therefore developing deeper characteristics and association of leadership. To further clarify this point Ely et al.

(2011) purport the following:

Internalizing a leader identity entails a set of relational and social processes through which one comes to see oneself, and is seen by others, as a leader. An individual takes actions aimed at asserting leadership, others affirm or disaffirm those actions, encouraging or discouraging further assertions, and so on. Through this back and forth, the would-be leader accumulates experiences that inform his or her sense of self as a leader, as well as feedback about his or her fit for taking up the leader role. (p. 476)

Theories of Leadership

Scholars have been studying leadership for centuries. The Industrial Revolution brought about more intensified research on leadership. Researchers began to study leadership using scientific methods to understand and predict successful leadership qualities by identifying and measuring leadership traits (Nahavandi, 2011). The history of modern leadership studies can be divided into three stages: the trait era, the behavior era and the contingency era.

Trait Era (late 1800's to mid 1940's). At the beginning of the 20th century scholars sought to understand what traits individuals (men) possessed that made them successful leaders. According to Northouse (2012) the trait theories became to be known as the “great man” theories because of their focus on identifying the innate qualities and characteristics possessed by great social, political and military leaders. Scholars believed that individuals were born with these leadership abilities and only “great” people had them and that these characteristics clearly distinguished leaders from followers (Bass & Stogdill, 1990; Jago, 1982).

In the mid-20th century, the Great Man theories were scrutinized by scholars who argued that there was no evidence that “any consistent set of traits differentiated leaders from followers across a variety of situations....a leader in one situation may not be a leader in another” (Northouse, 2012, p. 19). This scrutiny started a leadership reconceptualization movement focusing on leadership relationships and behavior between the leader and people (Northouse, 2012).

Behavior Era (mid-1940’s to early 1970’s). The trait approach did not produce the desired results on what makes a great leader (i.e. what characteristics they possess). During World War II the need for identifying and training leaders was of utmost importance.

Researchers began studying leadership behaviors (i.e. what an effective leader does). Nahavandi (2011) argues the following:

Instead of identifying who would be an effective leader, the behavior approach emphasizes what an effective leader does. Additionally, by focusing on behavior rather than traits, behaviors can be observed more objectively than traits, can be measured more precisely and more accurately than traits and as opposed to traits, which are either innate or developed early in life, behaviors can be taught. (p. 64)

Nahavandi (2011) also states that “like the trait approach, the behavior approach to leadership disregarded powerful situational elements of leadership and provided a simplistic view of a highly complex process...it failed to provide a thorough understanding of the leadership phenomenon” (p. 65). Stodgill (1948) recommended that situational factors be taken into consideration such as the assignment, and the type of work group.

Contingency Era (1960 to 2001). Fred Fielder (1964) introduced the Contingency Model of leadership which moved from a simple model based totally on the leader to a complex

model based on situations and contingencies. The premise of this model is that the personality, style or behavior of successful leadership depends on the requirements of the situation and that the most effective leaders should change leadership styles based on the situation (Nahavandi, 2011). The approach suggests that “there is no best way to lead, the situation and the various relevant contextual factors determine which style or behavior is most effective, people can learn to become a good leader...” (p.65). Researchers Cellar, Goudy, O’Brien and Sidle (2001) wrote that other models and theories such as Blanchard’s Situation Theory, Path Goal Theory and Vroom Yetton’s Leadership Model soon followed.

Leadership Theories Beyond 2001. Collins (2001) examined several companies to understand what made them great companies. The author discovered that they all had similar leadership development pipeline models consisting of five levels; the highly capable individual, the contributing team member, the competent manager, the effective leader and the level 5 executive.

Valerio (2009) argued that leadership competency models are more effective because they include a broad range of dimensions instead of skills and create a common language and behaviors that are expected of successful leaders. This model focused on senior leadership development. Although it was implied that different competencies are needed for each level of management, no information was provided as to what occurs when individuals transition from one leadership level to the next.

One major contributor to the field is Drotter et al. (2011) who argued that organizations as a long term strategy should build their leadership talent. The authors offer a leadership pipeline development conceptual model. Drotter was a student of Mahler who in the 1970’s developed the crossroads model of leadership which entailed major intersections in leadership

at every level, each having a set standard of requirements. Later, Drotter et al. (2003, 2011) made enhancements and refined the crossroads model into the leadership pipeline model. The researchers state that the leadership development pipeline is a blueprint for developing leaders through a planned pipeline series of tests and challenges to prepare future leaders for the next level.

Drotter et al. (2011) posits that the leadership development pipeline has been used in the field to (1) help organizations understand that management and leadership roles are not the same on all levels of an organization, because of many differences in optimal time application, skills and work values, (2) facilitate individual performance improvement, coaching, mentoring, training and experience assessments and planning, (3) facilitates succession planning, leadership development, (4) improve selection processes, (5) facilitate more objective promotion decisions, (6) help human resources to focus on specific skills, time application and work values, rather than rely on generalized training and development programs, (7) identify and remedy mismatches between individuals' capabilities and their leadership level, (8) identify when someone is ready to move to the next leadership level, (9) identify bottlenecks in the pipeline and (10) resolve pipeline issues to prevent potential pipeline failures.

Drotter et al. (2011) outlines six passages and transition points that leaders must pass in the leadership development pipeline. When comparing Collins (2001) and Valerio's (2009) leadership beliefs with Drotter's et al. (2011) conceptual model, project managers and team leads are not recognized as managers whereas Drotter et al. (2011) model considers these roles as functional management positions. Additionally in both Collins and Valerio there was limited elaboration on what happens within the transitional boundaries between leadership levels. Drotter et al. (2011) leadership development pipeline theory fit more with the framework of this

study. It included the major managerial and leadership functions in an organization with a focus on the transition or passage points as an individual transition from the management level all the way up to the highest executive level in the organization.

Using Drotter et al. (2011) leadership development pipeline conceptual model allows for a deeper understanding of how the leadership development pipeline prepares and/or hinders women in IT leadership positions. By gaining a deeper understanding of this phenomenon, it is possible to uncover an in depth understanding of how challenges and obstacles can be resolved at each stage and how leadership development for IT females can be continuously improved. Although a number of scholarly literature on women in information technology is available, in recent years the focus has shifted from overall obstacles and challenges of IT women working in male dominated roles to a narrower focus on leadership styles, behaviors and leadership development relating to why after many years of studies, only a hand few of women transition to IT executive level positions. This implies that there is a leadership development pipeline problem and more is needed to ensure that women get through the leadership pipeline on to executive IT positions (Sandberg, 2013).

IT Women and Leadership Development

IT is still a male dominated industry with men outnumbering women in leadership by over 90% in IT executive leadership positions suggesting potential problems in the leadership development pipeline for women (BLS, 2014; Greenhaus et al., 1997; King, 2012; NASCIO, 2014; Rosmarin, 2007). Macdonald (1998) suggest that organizations need a more effective strategy for their leadership development pipeline that integrates the uniqueness and style of leadership that women leaders bring to the workplace. Macdonald (1998) wrote the following:

The evolution of today's organizations "requires a different emphasis on attributes in

developing future managers. These attributes include team working, high interpersonal skills, negotiating, consensus management, and the ability to handle several issues or projects at one time. It is interesting that these are the attributes that social evolution has developed in women. Female ways of managing life are much better suited to tomorrow's business than traditional male behavior. (p. 222)

The past 30 years have brought women leaders to the forefront with more women in leadership roles than ever before (DOL, 2014). However the Women's Bureau of Statistics report that in the science, engineering, math and technology areas women and women leaders are still vastly lagging behind (DOL, 2014). There is a need to increase the representation of IT women in the leadership pipeline and other STEM areas (Ashcraft & Blithe, 2009; NSTC, 2014; OSTP, 2013). Due to a shortage in IT labor (DOL, 2014) increasing the number of women in IT and in leadership roles could significantly narrow the IT labor gap.

Leadership development is critical to the viability and sustainability of any organization. It is essential to have developed leadership talents in the event of a departure of other leaders due to attrition or other factors. According to Rothwell (2005), having a leadership replacement strategy or succession planning is paramount to the sustainability of organizations. The author advocates that "the continued survival of the organization depends on the right people in the right place at the right time to do the right things" (p. 18). The best way to accomplish succession planning is through creating a funnel of future prospective leaders and having an effective leadership pipeline strategy (Drotter et al., 2011). The leadership pipeline historically has been filled with men. According to Ely et al. (2011), most leadership development structures were designed when there was a small presence of women in the

workforce. Although women currently make up over half of the U. S. labor force (DOL, 2014), the leadership pipeline continues to “reflect men lives and situations” creating barriers for women “making it difficult for women to get on—and stay—the course” (Ely et al., 2011, p. 478).

Leadership Development and Job Transition. Although research is available on transitioning from one career field to a different career field, literature is thin regarding job transition within the same career field. Literature on leadership development from the perspective of transitioning jobs within the same career discipline is also shallow (Drotter et al., 2011) and almost nonexistent regarding how women in IT fields transition from one level of leadership to the next. There have been scholarly discussions around women in IT fields not making the transition to higher level executive IT positions (McCauley, Morrow, Ohlott, & Ruderman, 1994). Rosener (1990) found that women in general lead differently than men and learn differently than men. White (1995) found that these differences in leadership are based on gender differences. Yet, other researchers suggest that the low representation of women in executive positions can be directly linked to gender-bias, and the challenges that IT women face as a leader in a male dominated role (Acker, 1992; Kvande & Rasmussen, 1994; Lemons & Parzinger, 2001, 2007; NCWIT, 2014; Rutherford, 2001; Tapia & Kvasny, 2004;). Other scholars believe that women lack the qualities and skills necessary to move up to higher level IT positions because of inadequate leadership development (Ashcraft & Blithe, 2009; Egan, 2015; Wentling & Thomas, 2009). Although not explicitly stated these findings also suggest that women preparation for leadership may be different from men, especially women who work in male dominated fields such as IT.

One way to look at how women develop their leadership abilities as they transition

from one level of leadership to the next in IT fields is through the lens of Drotter's et al. (2011) leadership development pipeline model (LDP). The LDP model looks at leadership development transitions that occur when individuals leave one position and move to the next leadership level—specifically it examines the individual's changes in time application, changes in skill set and changes in work values. This model will be applied to women in IT leadership as they transition through different levels of leadership. The LDP model consists of six passages that must be achieved (Drotter et al., 2011). At each passage or transition point, the individual learns to manage new types of responsibilities.

There are six passages of transition within the LDP framework. Each transition passage represents a different leadership level. Passage 1 is managing self to managing others. Passage 2 is managing others to managing managers. For the purposes of this study, passages 1 and 2 represent transitioning from individual contributor to a lower level supervisor role. In passage 3, an individual transitions from managing managers to managing functional manager. Passage 4 is transitioning from a functional manager to a business manager role. Passage 3 and 4 are middle management level roles. Passage 5 is when an individual transitions from a business manager to group manager role, and passage 6 is when an individual transition from group manager to an enterprise manager. Passages 5 and 6 are executive leadership positions. Each passage is explained in greater detail later in this chapter.

In order to move up the leadership pipeline, there are passage or transition points that an individual must pass. Each passage or transition point requires different skills. The transition or passage points represent readiness to the next level through prior preparation. The leadership pipeline participants enter at the individual contributor level and proceed to entry level supervisor (passages 1 and 2), then to middle management (passages 3 and 4), and can

proceed to executive leadership (passage 5 and 6). At each passage or as a leader transitions from one level to the next, a change in skill set, time application and work values are required. A change in skill set requires the individual to utilize different talents and skills to be successful. A change in time application governs how the individual works. A change in work values is what the individual believes is important thus becoming the primary focus of their efforts. For the purpose of this study the changes represent the constructs on which individuals must pass and be evaluated in order to pass to the next level. Following are the six passage points that illustrate at each cross section the various requirements needed for change in skill set, change in time application and change in work values as outlined in the LDP model (Drotter et al., 2011, p. 16).

1. From managing self to managing others. Individuals at this level have demonstrated that they are individual contributors and can collaborate with others
 - a. Change in time application; must learn how to reallocate their time so that they can perform their own work but can also help others perform their work effectively.
 - b. Change in skill set; must learn to transition from doing work to getting work done through others.
 - c. Change in work values; must shift from valuing individual work to valuing managerial work
2. From managing others to managing managers.
 - a. Change in time application; must only manage and move away from doing individual tasks.
 - b. Change in skill set; the key skills to master during this transition include selecting

to turn passage one; assigning managerial and leadership work to them, measuring their progress as managers and coaching them.

- c. Change in work values; must learn to hold first-line managers accountable for managerial work instead of technical work.

3. From managing managers to functional managers. At this level, individuals manage an entire function.

- a. Change in time application; at this level individuals participate in business-team meetings, work with other functional managers, create a functional strategy that enables them to do something better than the competition, develop a sustainable competitive edge and add value within their function.
- b. Change in skill set; develop new communication skills, be able to manage some areas that are unfamiliar, learn to consider other functional needs and concerns, perform teamwork with other functional managers and compete for resources based on business needs.
- c. Change in work values; must be capable of adopting a broad and long-term perspective.

4. From functional manager to business manager. Business managers must rely on teams of functional managers.

- a. Change in time application; allocating time to think is a major requirement at this level. Must stop doing something every second of the day and reserve time to reflect and analyze.
- b. Change in skill set; business managers are responsible for the bottom line. Instead of focusing on the feasibility of an activity, they must examine it from a short-term

and long-term profit perspective.

- c. Change in work values; must value the success of their own business.
5. From business manager to group manager.
- a. Change in time application; must shift from running their own business to succeeding indirectly by managing and developing several businesses and business managers.
 - b. Change in skill set; must be able to evaluate strategy in order to allocate and deploy capital, develop business managers, develop and implement a portfolio strategy and assess whether businesses have the right core capabilities to win.
 - c. Change in work values; derive satisfaction from the success of other people's businesses, must appreciate managing a portfolio of businesses.
6. From group manager to enterprise manager.
- a. Change in time application; set direction and develop operating mechanisms to know and drive quarterly performance as it relates and aligns with long-term strategy. Must be able to make a subtle shift from strategy to visionary thinking, and from an operating to a global perspective. Must focus on the whole and let go of the pieces. Must be capable of assimilating high achieving, high performance and ambitious teams with the understanding that some are aspiring to be an enterprise manager and some individuals may want their job.
 - b. Change in skill set; ability to manage a long list of external constituencies proactively.
 - c. Change in work values; must learn to value trade-offs and appreciate managing one entity.

In addition to the above conceptual model, the framework was used to (1) identify the

various leadership levels to be studied, (2) identify and remedy mismatches between individuals' capabilities and their leadership level, (3) identify when someone is ready to move to the next leadership level and (4) identify bottlenecks that women who are in IT leadership face within the leadership development pipeline.

Drotter et al. (2011) believe that in order to be successful at higher leadership levels leaders must be able to master the requirements that are needed at each specific level of leadership. Demonstration of successful transition of each change in time application, change in skill set and change in work values are important components for evaluating a leader's preparedness for transitioning to the next level of leadership and for assessing their effectiveness and their performance (Drotter et al., 2011).

Chapter Summary

Although women in leadership roles have increased over the years, women in IT leadership are still underrepresented when compared to men. Women in IT leadership continue to face many barriers in the workplace that block them from achieving executive leadership positions. These barriers include the stereotyping, harassment, gender biases, segregation, discrimination, lack of access and opportunity and lack of leadership development. Although a small percentage of women achieve executive IT positions they are outnumbered by men by over 90% (King, 2012; NASCIO, 2015; Rosmarin, 2007). Studies have shown that many women leave at the middle management level because they face a glass ceiling, cultural challenges, gender-based biases and lack development opportunities. Because the number of women in IT leadership roles is scarce, there is a lack of role models and mentors for IT women. This leaves the impression that women may not be suited for IT leadership. It also signifies that the leadership development pipeline is broken for women in IT fields. This

impression has lead younger women to avoid technology careers or not pursue technology studies at universities. The underrepresentation of women in STEM [IT] has caused concern and is a topic of discussion among government and business leaders.

The DOL acknowledges that women are underrepresented in IT fields. They also report that there is a significant gap in IT the work force that is expected to widen by 2018 (DOL, 2014). The IT labor shortage has economic implications for the U. S. If the shortage continues it will hamper the ability for U. S. innovation and competitiveness in global markets. Increasing the number of women in IT would significantly narrow the gap and bring new and unique innovation and creativity to the design of technology products.

The federal government, academia, business and community leaders are working together by developing funded programs earmarked to increase the representation of women in IT areas and positions including leadership development. In addition to these funded programs scholars believe that in order to be successful, organizations need to remove cultural and structural barriers that hinder women from achieving executive leadership roles. They recommend that organizations re-engineer their leadership development strategies to integrate the unique requirements needed for women to successfully navigate the IT leadership development pipeline.

One way to look at the leadership development of women in IT is through the lens of Drotter's et al. (2011) leadership development pipeline model which purports to identify and resolve leadership development pipeline issues and bottlenecks as individuals' transition from one level of leadership to the next. This study uses Drotter's et al. (2011) conceptual framework which identifies six leadership passages and evaluation points. Using the leadership development pipeline conceptual framework, this study only looks at women at the IT mid-

management level and the IT executive leaders because according to the literature these are the levels that women in IT leadership find the most challenging and drop out.

Chapter 3 discusses the methodology, the process and procedures used to conduct the study.

CHAPTER 3

METHODOLOGY

The purpose of this qualitative phenomenological study explored women's lived experiences in their development as leaders in IT fields. Little is known about the nature of the informal and formal quality of leadership development experienced by women in IT fields as they transition from one level of leadership to the next. The phenomenological research method was employed to explore how women in IT fields develop their leadership abilities as they transitioned up the leadership ladder. The participants were all currently working in an IT middle management or an IT executive leadership role. The participants came from academia, government and the business sectors. All participants had been working in their current position for one or more years.

This chapter provides comprehensive information about the phenomenological methodology that was used to explore how women in IT fields developed their leadership abilities as they transition into middle management and executive levels. In order to understand the essence of the lived experiences of the participants, a phenomenological research approach was the best method for this type of study (Creswell, 2013; Moustakas, 1994).

Phenomenological research permits the researcher to explore the phenomenon from the perspectives and viewpoint of the participants (Moustakas, 1994). Also explained are the major components of the phenomenology research method and how it was applied in this study. This study allowed the researcher to gain a deeper understanding of the lived experiences of women as they transitioned from one leadership level to the next within IT fields.

Research Design

According to Gordon (2013) research design can be viewed as a roadmap and plan used by the researcher to draw sound and proven conclusions based on data collection and analysis. He also states that the research design should show the path with techniques on how the final destination was reached. Qualitative research design methods attempt to make sense by interpreting human behavior and social justice issues (Bernard & Ryan, 2010; Creswell, 2013; Glesne, 2006; Marshall & Rossman, 2010) and how the participant views the world and the environment around them. This qualitative study uses a phenomenological research design because its focus was on the lived experiences of women in their development as leaders in IT fields; how they prepared for their leadership positions and develop job skills which included changes in time application, skill sets and work values at each leadership level. A research design flowchart for this study is available in Appendix A.

Creswell (2013) states that the “intent of qualitative research questions is to narrow the purpose to several questions that will be addressed in the study” (p. 138). He also states that researchers should “state the broadest question they could possibly pose to address their research problem” (p. 139) and should be “reduced to a single overarching central question and several sub-questions. This study explored the lived experiences of women as they transitioned into middle level leadership (passages 3 or 4) and/or executive level leadership (passages 5 or 6) positions in IT fields. Within the Drotter’s et al. (2011) conceptual leadership development framework model, middle management roles are referred to as passages 3 or 4, and executive leadership roles as passages 5 or 6 on the leadership spectrum. The research question and sub-questions guiding this study were:

1. What are the lived experiences of women in IT fields as they transition into middle level management (passages 3 or 4) and/or executive level leadership (passages 5 or 6) positions as identified in Drotter, Charan and Noel's (2011) Leadership Development Pipeline Model?

- a. What are the changes in time application during those transitions?
- b. What are the changes in skill sets during those transitions?
- c. What are the changes in work values during those transitions?

Little research exists on how women develop their leadership abilities in IT fields as the transition from one level of leadership to the next in organizations. A qualitative phenomenological method is justified to capture the essence of the lived experiences of women in IT fields as they transition up the career ladder to executive leadership roles.

Phenomenological Research

In this study, phenomenological research is used to interpret and capture the essence of the lived experiences of the participants that is determined by the individual's circumstances, environment and culture (Creswell, 2013; Moustakas, 1994; Van Manen, 1997). Marshall and Rossman (2010) suggest the following:

For a study focusing on an individual's lived experiences, the researcher can also argue that human actions cannot be understood unless the meaning that humans assign to them is understood. Because thoughts, feelings beliefs, values, and assumptions are involved, the researcher needs to understand the deeper perspectives that can be captured through face to face interaction and observation in the natural setting. (p. 93)

Creswell (2013) believes that a qualitative phenomenological study is best when studying several individuals who have shared the same experiences and when there is a need to

understand the essence of the lived experience as described by participants. Moustakas (1994) states the following:

The aim is to determine what an experience means for the persons who have had the experience and are able to provide a comprehensive description of it. From the individual descriptions general or universal meanings are derived, in other words the essences or structures of the experience. (p.13)

This study uses the phenomenological research methods and procedures recommended by Moustakas (1994) and supported by Creswell (2013), Bernard & Ryan (2010), and Marshall & Rossman (2010).

Research Method

The qualitative phenomenological research method recommended by Moustakas (1994) is the most widely used method by qualitative researchers for conducting phenomenological studies (Bernard & Ryan, 2010; Creswell, 2013; Marshall & Rossman, 2011). Examining women as they develop as IT leaders requires an in-depth understanding of their real life experiences. By using Moustakas' (1994) phenomenological methods the researcher can see through the eyes of the participants to gain a deep understanding of their lived experiences.

To enhance and illustrate rigor and confidence of this study (Bernard & Ryan, 2010; Creswell, 2013), the researcher used Lincoln and Guba's (1985) trustworthiness and credibility concepts. Furthermore, as recommended by Moustakas (1994), the researcher developed a general question interview guide that allowed enough flexibility for the participants to fully share their lived experience. The researcher's organization and analysis of data started with the participant's response to the questions, by giving "equal value" to every statement that was

relevant to the phenomenon (p. 95).

To further clarify the researcher's design methods, although Moustakas' (1994) was the eminent scholar in phenomenological research methods for this study, Creswell (2013), Marshall and Rossman (2010), and Bernard and Ryan (2010) are included as strong promoters of his work and their methods were used to provide further clarity on Moustakas' research procedures. Creswell (2013) posits that interview questions should be "open-ended questions" (p. 52) and that a "variety of sources of data should be collected" (p. 52). Marshall and Rossman (2010) say that in-depth interviews are essential in understanding the lived experiences of participants and to establish credibility. Bernard and Ryan (2010) identify various data analysis tools to complement Moustakas' seven step procedures.

For this study, the researcher set aside any personal biases in order to capture and describe the essence of each participant's lived experiences as they developed as IT leaders. Long and in-depth interviews were conducted by phone and via email using semi-structured open-ended questions. To accomplish triangulation, in addition to in-depth interviews, the researcher collected additional data about each participant such as their resume and/or biography, reviewed their LinkedIn profile, their organization's or institution's website, information on their professional affiliation organization, their personal website (when available) as well as other relevant information. To ensure trustworthiness, phone and email transcripts were sent to the respective participant to allow them to review their responses for corrections, accuracy and to make modifications if necessary.

Selection of Participants

The primary sampling strategy used in qualitative research" (Creswell, 2013, p. 299) and in this study was purposeful sampling. In purposeful sampling, the researcher selects the

participants and the sites because they can purposefully inform an understanding of the research problem and central phenomenon in the study” (p. 300). According to Creswell (2013), there is no set number of participants to interview when conducting a qualitative phenomenological study, however, Polkinghorne (1989) suggests interviewing a minimal of five participants for a phenomenology study. Creswell (2013) believes that interviewing up to ten participants who have relevant knowledge and can articulate it should be enough to reach saturation for qualitative studies. Many of the participants described in this study are women in IT fields who were interested in transitioning to a higher level of IT leadership. There were nine women that participated in this study. The participants were required to have one or more years of experience and be a current IT leader working at the middle management level (passages 3 or 4) or at the executive leadership level (passages 5 or 6).

The literature did not reveal great discrepancies in any specific geographic region within the U. S. concerning the development of women in IT middle management and IT executive positions. All of the participants interviewed lived in the Midwest, West and Southwest regions of the United States. The participants for this study were recruited from three organizations: EDUCAUSE, a national professional organization that promotes information technology in higher education, Syssters who advocates for the professional development of women in IT fields and SIM the only national professional network that connects senior-level IT leaders with peers in their communities — providing valuable opportunities for knowledge sharing, professional development, collaboration, and career advancement. These professional organizations were selected because they have a large membership base that include women in various IT leadership roles including IT middle management (passages 3 and 4) and IT executive leadership (passages 5 and 6) positions. Forty three women responded to the request

for participation. Twenty-six of the respondents did not meet the research criteria. Seventeen respondents met the research criteria. From this group, nine participants were selected based on their availability to interview within the established timeframe, and provide all of the requested information in a timely manner. One participant was a member of EDUCAUSE and eight participants were SIM members. While several individuals from Systems responded to the invitation to participate in the study, they did not meet the criteria for the study.

Although global issues regarding women in IT fields is not the focus of this study, on an international level the literature revealed leadership development concerns for women in IT fields. There are significant discrepancies among countries regarding the development of women in IT middle management and IT executive leadership positions (Hafkin & Taggart, 2001; Rutherford, 2001).

Data Collection

There are “four primary methods that qualitative researchers use for collecting data (1) participating in the setting, (2) observing directly, (3) in-depth interviews and 4) analyzing documents and material culture, with varying emphases” (Marshall & Rossman, 2010, p. 137). In-depth interviews “... provides information on context, facilitates discovery of nuances in culture, useful for uncovering participant’s perspective, learning about participant’s unconscious thoughts, describing complex interactions, discovering data on nonverbal behavior, and facilitates analysis, validity checks and triangulation” (Marshall & Rossman, 2010, p. 168). For this study, in order to cover a broad geographic area from which participants were drawn, a combination of email and telephone interviews were conducted. The researcher digitally recorded each participant’s phone interview session. All digitally recorded interviews were transcribed into a MS Word document. Responses to email interviews were returned as MS

Word documents. In addition to data from in-depth interviews, the researcher collected each participant's biography, curriculum vitae or resume, relevant news articles/announcements and company website reviews and LinkedIn profiles as well as their professional affiliation organizations' mission, vision, values, leadership philosophy and leadership development initiatives when available.

During the interview process the researcher used analytic memoing and reflective notes to record thoughts, ideas, log non-verbal communication, insights and observations about the phone interview sessions and email interview responses. Field notes were used as a backup precaution to the digital recorder. In the field notes the researcher made comments about the entire data collection process, what worked, what did not work, observations and descriptions (Marshall & Rossman, 2010). Since it is difficult to interview participants and take good field notes simultaneously (Bernard & Ryan, 2010), in order to minimize errors and memory loss the researcher wrote field notes immediately after each interview while it was fresh in the researcher's mind. Additionally, to minimize personal bias, the researcher used epoche and bracketing to set aside their own preconceptions to build a positive and conducive atmosphere between the researcher and the participant. The researcher applied epoche/bracketing throughout the entire data collection process (Creswell, 2013; Moustakas, 1994).

Epoche/Bracketing

According to Moustakas (1994), it is important to use a transcendental approach in qualitative research meaning that "everything is perceived freshly, as if for the first time" (Creswell, 2013, p. 80). Phenomenological research is not about the interpretation of the researcher but focuses on the description of the lived experiences of the participants in the study. Researchers should bracket themselves by setting aside their experiences and biases.

This concept was developed by Husserl (1962) and is referred to as epoche or bracketing. Epoche is not just a one-time event it is an integral part of this research, and was applied throughout the data collection and data analysis process in this study (Marshall & Rossman, 2010; Moustakas, 1994). Epoche was accomplished by the researcher making it known early on in the study their own biases. The researcher made known any biases by setting aside their own experiences as much as humanly possible in order to look at the data with fresh eyes (Moustakas, 1994). Epoche was can be very difficult and requires that the researcher allow a phenomenon to stand on its own and to accept it as presented by the participant (Moustakas, 1994). For the most part the researcher was able to set aside personal biases, however there were several occasions where it was very difficult. In those situations, the researcher's epoche was triple checked to make sure that personal bias was not being introduced. The next section describes the epoche and role of the researcher.

Role of the Researcher

Epistemology is described as "how you know what you know"(Glesne, 2006, p. 6). Using this context the researcher gained sufficient knowledge to understand the truth about the phenomenon which may be different from the researcher's own beliefs. For this study, the researcher acquired knowledge by collecting subjective evidence from each participant based on their individual views and lived experiences (Creswell, 2013). Stating the role of the researcher and using epoche/bracketing upfront is important because it provides both the researcher and the reader with a starting point for understanding and evaluating the researcher beliefs balanced against the truth and knowledge discovered through this study (Creswell, 2013). The following section is a written statement of the researcher's epoche.

The researcher has over thirty years of experience in information technology. She started

as a computer operator/programmer and worked her way up to an IT executive position (passage 6). The researcher believes that IT is a great field for women. She has had a rewarding career, loved the leadership role and made significant contributions to the organizations where she served in an IT leadership capacity. The researcher had the opportunity to work at several organizations that embraced cultural and gender differences, and recognized the unique qualities that women bring to the workforce as employees and as leaders. One organization specifically recruited women into their leadership development and succession planning program. As a woman in IT, the researcher was able to benefit from this program. Women were assigned sponsors, support, and networking opportunities as well as provided opportunities to lead highly visible assignments. Several women were promoted to executive level positions. Although women still faced challenges, the organization worked to change negative behaviors and attitudes towards IT women in the workplace. They developed strategic plans with policies to address women workplace issues and implemented solutions.

In contrast, in other organizations, the researcher encountered gender inequality, discrimination and cultural issues. She experienced first-hand the leadership development barriers, negative attitudes and behaviors that women in IT face and the struggles that she and other women in IT leadership positions were confronted with almost on a daily basis. Early on in the researcher's career, as a woman in a male dominated role in IT leadership (passage 2 and it was difficult to gain leadership development opportunities and/or to get promoted. As a woman, the researcher was continuously second-guessed, oftentimes ignored or talked over, not given recognition for excellent work performance and contributions, and excluded from decision making and high visibility assignments that generally lead to promotions. In spite of these barriers, the researcher was still able to transition to higher level positions (passages 5

and 6) which sometimes meant that it was necessary to switch companies to achieve an executive level position.

By conducting this research it is hopeful that workplace barriers such as leadership development for women as they attempt to transition from one level of leadership to the next will be illuminated causing a wave of positive changes that will minimize workplace and leadership issues for women in IT fields. The goal of this researcher is to seek the truth from the knowledge acquired through the study. Finally, throughout the study, the researcher used triangulation and other validation strategies such as trustworthiness, credibility, confirmability, transferability, bracketing, member checking and peer review to minimize preconceived biases about the phenomenon under study.

In-depth Interviews

Kvale and Brinkman (2009) explain that qualitative interviews can be viewed as “a construction site of knowledge” where two or more individuals discuss a “theme of mutual interest” (p. 301). The initial email introduced the study, the purpose of the study and the criteria for participation in the study (see Appendix B—Research Recruitment email) was sent to three national organizations (EDUCAUSE, Syssters and SIM). Each of the organization’s membership coordinators forwarded the research recruitment email to their IT women members. Forty three women responded. The respondents that met the criteria to participate in the study were sent an email informing them that they were eligible to participate in the research asking them review to submit three dates of preference to conduct the two one hour interview and to indicate whether they wanted to do the interview by email, phone, Skype or face to face interview. They were also informed that if they chose email as their interview method that they would receive the interview questions immediately upon return of the signed

informed consent. They were also informed to contact the researcher if they had any questions about the research, the informed consent, interview protocol or process (see Appendix C).

Phone interviews were conducted with six participants. Three participants opted to do interviews through email.

During the interview process, as suggested by Creswell (2013) and Moustakas (1994) semi-structured open-ended questions and probing questions were asked. Semi-structured questions allowed for probing and flexibility and “open-ended questions allowed individuals to respond in their own words and the researcher to capture the people’s [participant’s] own ideas about how things work” (Bernard & Ryan, 2011, p. 34). The researcher conducted two in-depth interviews sessions with each participant as recommended by Marshall and Rossman (2010). The first interview focused on the participant’s current and past leadership development experiences. The second interview focused on the participant’s job transition, specifically their changes in time application, changes in skill set, and changes in work values. Participants were also asked questions about the IT culture and about the lessons that they learned from their leadership development experiences. There were two interviews with a combined duration ranging from one hour and forty minutes to two hours and six minutes (see Table 2). Digitally recording interviews allowed the researcher to have a better quality record of the session and to literally capture each participant’s information. A combination of phone and emails were used to follow up with participants for clarification purposes, when necessary.

Interview Protocol

The interview protocol questions for this study were designed to answer how women experience leadership development as they transition from one leadership level to the next in IT fields. To be effective in understanding the phenomenon under study, it is important to ask

the right questions in the right way to get a clear account of the participant's experience (Creswell, 2013; Glesne, 2006). The question asked determines the answer that is given. Therefore it is essential that questions are not ambiguous, and are of a quality design that reflects the researcher's intention (Creswell, 2013). Moustakas (1994) states the importance of the quality of interview questions and that each question must be stated in "clear and concrete terms" (p. 104). He also purports as follows:

Human science research questions have definite characteristics that seeks to reveal more fully the essences and meanings of human experience; uncover the qualitative rather than the quantitative factors in behaviors and experience; engage the total self of the research participant, and sustain personal and passionate involvement; it does not seek to predict or to determine causal effects; it is illuminated through careful, comprehensive descriptions, vivid and accurate renderings of the experience, rather than measurements, rating or scores. (p. 105)

For this study the interview questions were designed to answer the primary research questions. The questions were developed with Drotter's et al. (2011) framework in mind. The IT middle managers and IT executive participants were asked 19 questions and 4 probing questions. The questions were categorized by leadership development, job transition and changes in job requirements, IT culture and lessons learned (see Appendix D— Interview Questions). After the first two participant phone interviews, two additional questions were added as a result of field notes and epoche. The researcher wanted to explore participants' experiences about why women were not making the transition to higher levels of executive leadership, and what advice they would offer women in IT on leadership development.

Data Analysis

When conducting data analysis, the researcher's focus was to look for patterns in the data that can help the researcher understand and explain why the patterns exist (Bernard & Ryan, 2010). When analyzing qualitative data, the researcher found general statements about relationships and underlying themes (Marshall & Rossman, 2010). Since qualitative studies produce a lot of data it was necessary for the researcher to reduce vast amounts of collected data into an organized structure for interpretation. Statements were categorized into meaningful units and clustered into common themes. From common themes textual descriptions of the experience were created. The essence of the phenomenon was discovered through the integration of the meanings, textures and structures (Bernard & Ryan, 2010; Marshall & Rossman, 2010; Moustakas, 1994,).

This process was time-consuming, chaotic and was not done in a straight line fashion (Marshall & Rossmann, 2010). As recommended by Creswell (2013), to aid in the data analysis of this study, a qualitative data analysis computer software called NVivo version 11 was used to organize the data and expedite the coding for the nine participants. The phone interview transcripts and email interview responses were imported into NVivo allowing for quality management, data examination, data analysis and faster coding (Creswell, 2013). Furthermore, as recommended by Moustakas (1994), in this study, the researcher employed a phenomenological analytical framework strategy for data analysis. The data analysis framework consisted of a seven step process. Following is a description of the seven steps (Moustakas, 1994) with a description of how they were applied in the study (p. 121).

1. Horizontalization— in this step, first the researcher bracketed (epoche) or set aside any personal experiences they had with the phenomenon under study. Epoche was applied

throughout the data analysis process (Creswell, 2013; Moustakas, 1994). The researcher bracketed personal experiences by providing “a full description of their experience with the phenomenon so that the focus will be [was] on the participants in the study” (Creswell, 2013, p. 193). Throughout this step the researcher listed every relevant expression to the experience and treated each statement as having equal weight and value. The researcher searched the data for significant statements about how participants experienced the phenomenon.

2. Reduction and Elimination—in this step, the researcher reviewed the data to determine if it contained experiences that were sufficient and necessary for understanding it, and to determine if it could be labeled. After multiple reviews of the data, the researcher identified the experiences that were significant to understand the phenomenon, organized the data into manageable chunks and applied labels to chunks of data. The researcher also developed “a list of non-repetitive and non-overlapping statements” and excluded irrelevant data (Creswell, 2013, p. 193).
3. Clustering units of meanings and theme development— during this phase, the researcher searched the participants’ data and found significant expressions, words, statements and then grouped the data under broader categories and themes, and re-labeled the data as needed (Creswell, 2013).
4. Validation—during this step, in searching for “life’s meaning” (Moustakas, 1994, p. 110), the “invariant constituents and their accompanying themes against the complete record of the research participant” was established by the researcher “to determine if they are expressed explicitly in the complete transcription and if they are compatible if not explicitly expressed” (p. 121). Data not relevant to the experience were

discarded (Moustakas, 1994). Additionally, the researcher continually searched the data for alternative understandings by repeatedly reviewing themes. From the data, the researcher developed a “synthesis of the textural-structural description” (explained in number 7 below) of each participant’s experience and sent them their own copy asking them to (1) review it for accuracy, (2) carefully examine the unified description of the search of life’s meaning and (3) to make additions and corrections (p. 111) and to return modifications within five days. They were also sent their individual textural descriptions for review and accuracy. One of the nine participants made minor changes, which resulted in the researcher making the necessary revisions. The participants were also sent their perspective transcripts and were asked to return the documents within seven days only with modifications. Only one of the nine participants returned their transcript with minor changes, which the researcher made the revisions.

5. Textural description—in this step, the researcher used relevant and validated themes to construct a description of “what” the participant experienced about the phenomenon (Creswell, 2013, p. 195). As a result of this step a written description was written by the researcher about what happened with each participant using verbatim examples from the email interview responses and transcribed phone interviews.
6. Structural description—this step involved the researcher reflecting on the each participant’s experience to construct a description of “how the phenomenon happened”. This included “a description of the setting or environment and the context in which the phenomenon was experienced by the participant” (Creswell, 2013, p. 195). The researcher wrote a description that included the environment where

each participant experienced the phenomenon and how the experience happened for each of them.

7. Synthesizing and composite description of meanings and essences—this step involved writing the report for presenting the data. The researcher presented the results of the data analysis in a written format using visual representation such as participant demographics, content analysis, clusters of meaning, final invariant constituents and themes tables as recommended by Creswell (2013).

Throughout the data analysis process, the researcher employed a continuous process for reducing data into manageable data chunks, assigning labels to each segment and interpreting and bringing meaning to words, phrases, quotes and statements about the lived experiences of the participants under study (Bernard & Ryan, 2010; Marshall & Rossmann, 2010). This process continued until the researcher reached saturation—meaning that additional analysis and or data collection resulted in more of the same findings (Marshall & Rossmann, 2010).

Informed Consent

The Institutional Review Board (IRB) approval for this human subject research occurred in January, 2016 prior to the commencement of this study. Informed consent is a written agreement of the participant's willingness to participate in the study as well as being audio recorded. It was also used to inform subjects that participation in the study is solely on a voluntary basis, to make participants aware of aspects of the research that may make them uncomfortable, and let them know that they can stop participating at any time during the research (Creswell, 2013; Glesne, 2006). Each participant was sent Informed Consent forms (see Appendix E—Informed Consent form) for this study and asked to review, sign, scan and return to the researcher. The Informed Consent forms were signed and returned to the researcher. At the beginning of the first phone interview session, the researcher provided each

participant an opportunity to ask additional questions about the informed consent and the entire research process. All participants acknowledged that they understood the terms and conditions of the informed consent and was ready to proceed with the interview. Participants taking the interview by email were encouraged to contact the researcher via phone or email if they had questions regarding the informed consent and/or the entire research process.

Confidentiality

Researchers must protect the privacy and rights of their participants. When conducting research, privacy is a major concern. There is an expectation by participants that the researcher will ensure that their identity remains anonymous and that their confidences are respected by not divulging with anyone the specifics of their identity, what they share, or what you observe. For this study, participants' real names and names of their organizations were replaced with pseudonyms and aliases. Additional measures included encryption and password protection of all electronic folders and files as well as a desktop windows password. USB flash drives were encrypted and password protected. All printed materials and documents with identifiable information were placed in a secured physical location. All of the measures used to protect participants privacy and confidentiality were outlined in the Informed Consent form that each participant was asked to sign and return to the researcher. Additionally, the researcher ensured that each participant understood the inform consent and answered questions that participants had about privacy and confidentiality prior to the commencement of each interviews. Email participants were invited to contact the researcher by phone or email for clarification or to ask questions about the informed consent.

Design Quality

Trustworthiness

Trustworthiness can be described as the rigorous process researchers take to ensure that their study meets qualitative research standards (Bernard & Ryan, 2010; Creswell, 2013; Marshall & Rossman, 2010; Moustakas, 1994). In qualitative research, trustworthiness should be performed regardless of the type of research and strict attention should be given to the trustworthiness in data collection, data analysis, data interpretation, and in the presentation of the findings (Creswell, 2013; Merriam, 1995). It is important that the research have credible and accuracy in the findings (Moustakas, 1994). In other words, the entire research process of “data generating, analysis and presentation” has to be trustworthy (Creswell, 2013, p. 250). Guba developed a trustworthiness model that is widely used by qualitative researchers (Guba, 1981). According to Lincoln and Guba (1985) the four constructs of the model are credibility, transferability, dependability and confirmability. The authors said that it is not necessary to use all of these constructs in a qualitative study. Although each construct has specific procedures for accomplishing trustworthiness, not all of them were applicable to this study. The researcher employed credibility, transferability and confirmability constructs from Guba’s trustworthiness model for this study. The following section describes how trustworthiness was applied in this study.

Credibility

Scholars believe that “the credibility of a qualitative report depends on using rigorous methods in the field, and the credibility of the researcher....” (Marshall & Rossmann, 2010, p. 250). Credibility is important because it enables the researcher to establish confidence in the “truth value” of the findings with the reader (Lincoln & Guba, 1985, p. 290). For this study, the

researcher used the following procedures to establish credibility.

Prolonged Engagement. Because it was necessary to build rapport and trust, the researcher used “prolonged engagement” meaning the researcher spent 100 minutes to 128 minutes (see Table 1) interviewing participants over the phone, including additional hours following up by phone and/or email correspondence, and constantly reviewing their data, to establish rapport and trust and to check for misinformation that stems from distortions introduced by the researcher or the participant (Lincoln & Guba, 1985, p.301). Time spent with each participant enabled rapport and trust to evolve between the researcher and the participant. Trust was also established through member checking, email correspondence, and by keeping participants informed about the progress of the study. Prolonged engagement resulted in the researcher being able to obtain more in- depth and sensitive information than the participant was willing to share at the beginning of the study and over the two interviews that were conducted.

Peer review. The peer review technique was used to provide an external check of the research process used for this study, and was conducted by another qualitative researcher, who also teaches qualitative and advanced qualitative research methods, at the graduate level for a large research intensive university (see Appendix K). The purpose of peer review was to access the integrity of the research by asking the hard questions about methods, meanings and interpretations. This process allowed for the researcher’s biases to be probed, meanings explored and the basis of interpretation clarified (Lincoln & Guba, 1985). From a credibility perspective, this step was important because it helped to keep the researcher “honest” (Lincoln & Guba, 1985, p. 308).

Table 1.
Content Analysis Manifest

Participants	Length of Interviews	Words Count
P1	100 mins	7,517
P2	128 mins	11,431
P3	Email	1,544
P4	Email	1,703
P5	Email	1,235
P6	108 mins	6,893
P7	121 mins	11,004
P8	115 mins	9,022
P9	126 mins	11,080

Epoche/Bracketing. Epoche allowed the researcher to make known their past experiences and prejudices about the phenomenon that may have influenced their own understanding and attitude of the study (Moustakas, 1994). The researcher provided a written description of their own personal bias early in the study so that their position and preconceptions were understood by the reader. In this study, epoche was not a one-time occurrence—the researcher applied it throughout the data collection and data analysis processes. This was a critical step in minimizing the researcher’s personal bias and enhancing the credibility of the research.

Member checking. Some scholars consider this step as the most critical technique in establishing accuracy and credibility (Lincoln & Guba, 1985; Merriam, 1988). Member checking was important because it established the accuracy and credibility of the study. In this step, the researcher provided each participant a copy of their own transcript to review for accuracy and to make modifications if necessary. Additional member checks were conducted; participants were sent their respective individual textural descriptions, their individual structural description, and a copy of the themes that emerged. They were asked to return comments and modifications within

seven days. Changes were received from two participants that were incorporated into this study.

Transferability

Transferability “cannot be specified by the researcher” but the researcher “can provide only the thick description necessary to enable someone interested in making a transfer to reach a conclusion about whether transfer can be contemplated as a possibility” (Lincoln & Guba, 1985, p. 316). The researcher provided “dense information about each participant and the research context and setting to allow readers to assess how transferable the findings are” (Krefting, 1991, p. 220). The following transferability procedure was used in this study.

Rich, thick description. The researcher provided rich, thick description of relevant information which consisted of exact quotes of what each participant said about their lived experiences (Lincoln & Guba, 1985). A rich, thick description is important and allows the reader to transfer information and determine if the findings can be conveyed to other situations. Rich descriptions were used in the individual textural descriptions, the structural textural descriptions and the synthesis of the textural and structural descriptions and to support the themes that emerged.

Confirmability

The extent to which the findings are free from researcher preconceptions and are solely derived from the participants and not prejudices, motivations and perspectives of others, is referred to as confirmability (Lincoln & Guba, 1985). To establish confirmability for this study the following reflexivity procedure was used.

Reflexivity. In some cases, the researcher could potentially develop a close relationship with a participant because of the vast amount of time that is spent with them. This

could pose a problem because the researcher could have a hard time separating their own personal experiences from those of the participant (Krefting, 1991). To address this potential issue, the researcher maintained a field journal, which contained daily schedules and logistics and reflected the researcher's thoughts, feelings, and ideas, generated by the interactions with participant and or participant's data. The researcher also logged conceptual ideas, thoughts and questions about the data, emerging codes, problems and concerns about the overall data analysis and data collection process. Additionally, the researcher used operational memoing (Groenewald, 2008) to note critical assessments, reminders and directives.

Triangulation

In this study, triangulation is a procedure that is used with credibility and confirmability (Krefting, 1991). Rather than list it under both areas, it is being addressed as a separate category. Triangulation is described as making use of multiple and different methods and data sources to corroborate the research in question (Creswell, 2013).

Although Yin (2010) is a case study qualitative researcher, he posits that “developing a convergence of evidence helps to strengthen the construct validity of your case [qualitative] study” (p. 5), which is also relevant to phenomenological qualitative research such as this study. The author also believes that the most robust evidence is established from a minimum of “three independent sources” that are all in agreement (p. 104). Therefore, in this study, the researcher used multiple sources (Lincoln & Guba, p. 185). Triangulation is important because it enhances the credibility of the research and illustrates to the reader the rigorous process of using multiple sources of data and methods to conduct the study. It also allowed the researcher to have checks and balances relative to the process, data collection, data analysis and accuracy of findings. Overall, triangulation

increased trustworthiness and the credibility of the study. The researcher used multiple independent sources such as interviews, resumes/biographies, professional affiliation, LinkedIn profiles and participants' personal website when available to achieve triangulation.

Chapter Summary

This chapter presented the research question, research design, research methods, selection and recruitment of participants, data collection, the role of the researcher, clarifying researcher bias, interviews, interview questions and protocol, data analysis, informed consent and confidentiality, trustworthiness, credibility, transferability, confirmability and triangulation. A comprehensive discussion of data analysis and findings are covered in Chapter 4.

CHAPTER 4

RESULTS

In Chapter 3, an overview of the methodology used to conduct this phenomenological qualitative study was presented. This chapter will present the findings that emerged from the study. The purpose of this qualitative phenomenological study was to explore women's lived experiences in their development as leaders in IT fields. Prior to this study, little was known about the nature of the informal and formal quality of leadership development experienced by women in IT as they moved from one level of leadership to the next. This study examined the lived experiences of women in IT leadership roles to understand how they experienced leadership development as they transitioned from one level of leadership to the next.

The phenomenology framework developed by Moustakas (1994) was used to explore and analyze how women in IT fields view leadership development, and revealed the following seven themes: (1) formal and informal leader preparation, (2) mentoring, sponsorship and networking, (3) IT workplace and cultural challenges, (4) purposeful and strategic thinking, (5) managing transitions and self-renewal (6) work life balance and family influence, and (7) strength and resilience. Semi-structured interviews were used to gather the data for this study. The instrument was an interview guide with open ended interview questions that was developed, and used to collect data from nine participants in IT middle management and executive leadership positions. There were 19 questions and 5 probing questions organized under four categories: leadership development, job transition—changes in job requirements, IT culture, and lessons learned. Because of the participants busy and sometimes conflicting schedules, they were given the questions prior to the commencement of interviews to ensure that all interviews would be completed by the researcher's interview completion timeline.

Demographics and Participant Profiles

Nine participant profiles were developed from a combination of sources such as, their interviews, resumes, LinkedIn accounts, and were confirmed at the time interviews were scheduled. All the participants lived in the U. S. with five participants from the Midwestern region, three participants from the Western region and one participant from the Southwestern region. Five participants held IT executive leadership roles (passage 5 or 6), and time in their positions ranged from nearly two years up to 26 years. Four participants held middle management level positions (passage 3 or 4), and time in their positions ranged from one year to 10 years. Educational levels ranged from bachelor's degree to advanced degrees including juris doctorate and doctorate degrees. One participant had bachelor's degree, one participant had a bachelor's degree and a master's certificate. Seven participants held master's degrees; five of which had an MBA, and out of the seven, three had undergraduate electrical engineering degrees, and one participant had a juris doctorate and a doctorate degree. They represented higher education, government and private industry sectors. Seven participants worked in private sector organizations, one in higher education and one participant worked in a public sector government organization. The majority of the participants started their careers in technology, several participants did not follow a linear path into IT leadership, meaning they entered IT from other disciplines such as sales and marketing, financial management, and military police fields. Eight of the participants had professional memberships with SIM, and one participant was affiliated with EDUCAUSE.

Although ethnicity was not a part of this study, one participant was a Latina, one was Asian, and one was Jewish. All participants were given aliases (P1-9) and companies were assigned pseudonyms (Company A-I). Saturation for the study was reached after the review of

the entire record of six participants. However, the researcher decided to continue data analysis with the three remaining participants to determine if saturation held.

Table 2.

Participant Demographics

Alias	Passage	Job Title	Education	Yrs/Exp	Sector	Region	Pseudo
P1	5	CIO	MA	1.8	HigherEd	West	A
P2	5	VP, CISO	MBA	3	Private	West	B
P3	5	CIO	BS/Master's Certificate	3	Government	West	C
P4	4	Sr. Director	MBA	1	Private	Midwest	D
P5	3	Director	MBA	10	Private	Midwest	E
P6	6	President	MBA	26	Private	Midwest	F
P7	3	Director	JD/PhD	1.1	Private	Midwest	G
P8	4	Sr. Director	MBA	1.1	Private	Midwest	H
P9	5	Exec. VP	BA	8.3	Private	Southwest	I

The job titles of the participants ranged from director (passage 3) up to company president (passage 6). Tables 3 through 11 provide profile summaries for each of the nine participants, which were created with the intent of acquainting the reader with the research participants. The categories on the tables were produced as a result of utilizing all information from the participants' entire data collection record such as, resumes, biographies, LinkedIn profiles, both sets of interviews, personal websites, and other relevant information. More detailed information regarding each participant can be found in the individual structural descriptions (see Appendix I).

P1 is Caucasian, and is passionate about women issues, and likes running. She is married, her mid-fifty's, and has two children. She made several leadership moves throughout her career, several required relocating her family. Table 3 provides profile of P1.

Table 3.

P1 Participant Profile

Education, Work Experience, Leadership Level, Time in Current Job, Geographic location
<ul style="list-style-type: none"> • Master's degree. • Currently a CIO executive working in an educational environment. • Has been in current leadership position (passage 5) for 2 years. • Over 31 years of IT experience. • Lives in the Western part of the U.S.
Leadership Development
<ul style="list-style-type: none"> • First experience with formal leadership preparation was a management course in MBA program. • Took various formal leadership programs, sponsored generally by her employer or through EDUCAUSE, helped her prepare for higher levels of leadership. • Feels fortunate to be able to participate in various types of leadership development program. • One aspect of informal leadership preparation consist of reading; whether its reading the biography of Abraham Lincoln or about the profiles of people with who face challenges in their leadership roles. Find it interesting to read about people, politics and in business. • Formal leadership preparation has been more effective for her, which led to a long-term informal networking relationship.
Making a Paradigm Shift
<ul style="list-style-type: none"> • As she moved from a Director to a AVP or a VP it became much more about the leadership piece; more about thinking about the long term and the bigger questions such as what are we going to do and not how are we going to do it.
Mentoring, Sponsorship, Coaching and Networking
<ul style="list-style-type: none"> • Did not have a formal mentor starting out but worked for people that she admired and observed their style and learned from them. • Has mentored women, and been in a couple of formal mentoring programs • Has been very active in networking organizations, particularly networking organizations focus on women in technology. • Is current in a long-term peer coaching relationship, and believes coaching is critical as you rise higher in the organization.
Boys Behaving Badly
<ul style="list-style-type: none"> • She observed that when men are at the table, people hear the men more than they're hearing women. Men sometimes talk over women. She was at a dinner meeting with about 12 CIO's (two were women) and was explicitly asked a question but not given a chance to answer it because one of the male CIO's answered it. Another male CIO said, that's kind of like a man's thing, you're about to say something and somebody steps in. She has seen this happening to women many times.
Work, Life, Family
<ul style="list-style-type: none"> • Relocated family 3 to 4 times to take on positions of increasing level of responsibility; agreed with spouse to no more relocations.
Set-backs, eye opening experiences, and/or catastrophic situation(s)
<ul style="list-style-type: none"> • After working in a company for 12 years, she lost out on a job promotion to a man; that was very upsetting, which caused her to seriously re-evaluate her career, and develop a personal leadership development strategy.
Future Plans
<ul style="list-style-type: none"> • Last job before retirement
Advice to Women in IT Fields
<ul style="list-style-type: none"> • Be strong technically and work very smart. • Have a vision and be good at strategic planning. • Don't make big screw ups. • Don't miss deadlines.

P2 is a Latina, and in her early 50's. She is married and has two children. P2 had many managerial and leadership positions with increasing responsibilities throughout her career. She enjoys traveling, working with young people regarding safety, and doing community emergency response work, yoga, hiking and trail running. Table 4 provides a profile of P2.

Table 4.

P2 Participant Profile

Education, Work Experience, Leadership Level, Time in Current Job, Geographic location
<ul style="list-style-type: none"> • Is an Engineer and has an MBA degree. • Currently a Vice President/Chief Information Security Officer working in private sector • Has been in current leadership position (passage 5) for 3 years • Over 20 years of IT experience • Lives in the Western part of the U.S.
Leadership Development
<ul style="list-style-type: none"> • Had lower level management positions before she had executive leadership roles. • Initially, she followed her inner voice and inner guidance; there was no leadership training. • Eventually she was able to attend leadership development training. • Believe informal leadership preparation is important, and does not underestimate the important of self-awareness and knowing herself. • In her early days on the job a Caucasian male took her under his wings, and was very supportive of her, which had an influence on her career and leadership.
Making a Paradigm Shift
<ul style="list-style-type: none"> • Switched her mode of leadership to engaging people, and less about driving tasks and details. • Believe leaders need to understand what they do well, and what they don't do well. • Made a big job change in that she was able to position technology in a way that it provided a business benefit to customers. • Learns quickly on her own because technology changes rapidly.
Mentoring, Sponsorship, Coaching and Networking
<ul style="list-style-type: none"> • Since she has risen to higher level positions in the organization, she finds it harder to mentor, she has to make more of an effort to reach out to otherwomen. • Occasionally, provide career advice, and is a sounding board for women
Boys Behaving Badly
<ul style="list-style-type: none"> • Believe that men behaving badly towards women in the IT workplace have gotten worse. • Has directly been confronted about her gender, race and ethnicity. • Have seen men relegate women as not understanding technology, and values them a less. They also place women in positions with a lower level of authority, and sometimes place them in a bucket, like project management, which does not require technical skills, which can impact women compensation and movement within the organization.
Work, Life, Family
<ul style="list-style-type: none"> • Shares with others that companies will take from you whatever you give them, and you have to be responsible for your own work, life balance. • Spends quality time with family, takes time away from work such as, vacation leave, does physical exercise activities
Set-backs, eye-opening experiences, and/or catastrophic situation(s)
<ul style="list-style-type: none"> • See comments in Boys Behaving Badly section.
Future Plans
<ul style="list-style-type: none"> • Is where she wants to be in her career, does not want to be a CEO or a CIO
Advice to Women in IT Fields
<ul style="list-style-type: none"> • Publicize your expertise. Advertise who you are, and what your capabilities are. • Have a branding plan for yourself.

P3 is Caucasian, married and has two children. She is in her early fifty's, and volunteers with IT professional development and advocacy organizations. She had held made several lateral career moves to before getting an executive IT leadership position, and has had several. She enjoys live theater, ballet, cooking and reading. Table 5 provides a profile of P3.

Table 5.

P3 Participant Profile

Education, Work Experience, Leadership Level, Time in Current Job, Geographic location
<ul style="list-style-type: none"> • Has a bachelor degree, and master's certificate. • Currently a CIO executive (passage 5) in government. • Has been in her current position for over 3 years. • Has over 30 years of IT experience. • Lives in the Western part of the U.S.
Leadership Development
<ul style="list-style-type: none"> • Self-starter, self-learner, and was able to quickly adopt leadership skills. • Getting a college degree helped her develop critical thinking and decision making skills, which were key skills for her first leadership position. • Informally prepared by obtaining positions of greater responsibilities, which exposed her to senior leadership and preparation for the CIO role. • Was able to eventually complete an executive leadership programs and other leadership training. • Believes that informal and formal leadership development methods complement each other.
Making a Paradigm Shift
<ul style="list-style-type: none"> • One position that she had required her to spend a lot of time outside of normal work hours. • The Data Security division was assigned to her, for which she had no previous experience. To get up to speed quickly, she spent a lot of time with the lead employee, and did a lot of self-study. She later hired an expert, and was able to learn a lot from him. • Believes that listening skills are paramount. • A significant change was during the economic recession, when she shifted from upgrading technology, to focus on finance and budget for five years— being creative in funding technology with no new funding. She learned a lot about financé, budget and charge-backs.
Mentoring, Sponsorship, Coaching and Networking
<ul style="list-style-type: none"> • Mentors others, and finds it very rewarding. • Network with other CIOs.
Boys Behaving Badly (IT workplace challenges)
<ul style="list-style-type: none"> • Salesmen, trying to sell products would not make eye contact with her, until they found out she was the boss. • Would like to see more women in IT executive roles; she is usually the only women in the room.
Work, Life, Family
<ul style="list-style-type: none"> • Worked for a company that had problems with the FTC that caused her job to become a 24x7 job that interfered with her family's dinner time, and other family activities for six month, which was hard on her, and her family. • Now has a job where she take time off work (vacation), and can spend quality time with her family,
Set-backs, eye opening experiences, and/or catastrophic situation(s)
<ul style="list-style-type: none"> • In an effort to protect her directors, she realized that she had not properly prepared them to deal with higher level executives. As a result, one of her most trusted director's lost his job after she left the company for another position.
Future Plans
<ul style="list-style-type: none"> • She is at the top of her career, after retirement she would like to work as a volunteer for a nonprofit organization.
Advice to Women in IT Fields
<ul style="list-style-type: none"> • Develop good communication skills. • Be well prepared for every meeting, and know whom you are speaking to • Speak up at all meetings. • Build your professional networks

P4 is Caucasian, and married with two children. She is in her mid-forty's. P4 is new to her leadership position and has been in it less than two years. She enjoys soccer, photography, running, and watching her kid's activities. Table 6 provides a profile of P4.

Table 6.

P4 Participant Profile

Education, Work Experience, Leadership Level, Time in Current Job, Geographic location
<ul style="list-style-type: none"> • Is an Engineer with a MBA degree. • Currently a Senior Director of IT, working in the private sector. • Has been in current position for over a year. • Has over 23 years of IT experience. • Lives in the Midwestern part of the U.S.
Leadership Development
<ul style="list-style-type: none"> • First pathway to IT management was in a supervisory role. • Leading team sports and organizing fundraising was informal leadership preparation for her leadership role. • Attended formal leadership training that covered leadership style, coaching, and communication. • Believes informal leadership development is the most effective method of preparation because of the immediate feedback that she gets, but you need both formal and informal leadership development.
Making a Paradigm Shift
<ul style="list-style-type: none"> • From the manager to director role, she spent less time on implementing the plan, and more time on figuring out what the plan should be, and focused on how to improve the process. • Believe leaders have to be able to motivate team members, and know when team needs inspiration; be able to give good motivational speeches. • Made a big jump from developer to project manager, and from project manager to program manager; changes involved organizing, planning and monitoring progress—was able to make sure things were moving in the right direction, and results were beneficial to the organization. • Learned not to always solve the problem for people but teach the person to fish, rather than fishing for them.
Mentoring, Sponsorship, Coaching and Networking
<ul style="list-style-type: none"> • Her current boss helps her and gives her feedback, and lets her know what she need to work on. • Mentors and coaches employees that work for her. • Believe mentoring is very rewarding, and want to help women breakthrough the glass ceiling.
Boys Behaving Badly
<ul style="list-style-type: none"> • Experienced exclusion in college when no male wanted her as an engineering lab partner, as they entered the lab they would walk past her. • During a company outing, a client made light of her because he was an engineer, insinuating she was only an engineer because her father had no sons. • Once in a meeting, a male turned red when he found out she was the IT representative. • Was referred to by some as an engineer in girl's clothing.
Work, Life, Family
<ul style="list-style-type: none"> • Spend time with her nieces and her friend's daughters, and is a positive influence in their lives.
Set-backs, eye opening experiences, and/or catastrophic situation(s)
<ul style="list-style-type: none"> • Was told that she was too intense under pressure, which was an eye opening experience for her. The next time things got stressful she was very intentional about what and how she communicated to others. • See comments in Boys Behaving Badly section.
Future Plans
<ul style="list-style-type: none"> • Want to be a CIO one day
Advice to Women in IT Fields
<ul style="list-style-type: none"> • Learn how to give good motivational speeches. • Ask for feedback. • Let people know what you want.

P5 is Jewish, and married with four children. She was an IT consultant for many years. She had not held any managerial roles prior to becoming an IT director at her current company. She does volunteer work for several organizations. P5 enjoys traveling , exercising, jewelry making and knitting. Table 7 provides a profile of P5.

Table 7.

P5 Participant Profile

Education, Work Experience, Leadership Level, Time in Current Job, Geographic location
<ul style="list-style-type: none"> • Has an MBA degree. • Currently an Information Systems Technology Director. • Has been in her current leadership role for 10 years, and works in the private sector. • Has over 32 years of IT experience. • Lives in Midwestern region of the U. S.
Leadership Development
<ul style="list-style-type: none"> • Informally prepared for leadership by learning how to ask questions, listen to people, observe business practices and propose improvements. Took an internal formal leadership development class with her peers. • Was a consultant for many years before here clients hired her as a Director. • Organization provided individual assistance to help develop leadership skills. • For her, the most effective leadership preparation was the 360 analysis that she took as part of formal leadership development.
Making a Paradigm Shift
<ul style="list-style-type: none"> • Focuses on IT Strategy, Learned all aspects of the business, and its products. • Struggle with balancing immediate or short term results with big picture strategy because immediate results are valued more at her company. • Realized that she needed to enlist the help of others to be successful; can't do all the work herself. • In a re-organization, managed the planning and scheduling, which was a big change from previous responsibilities. It was difficult because of dealing with customer issues and factory worker performance issues, which she had not dealt with before.
Mentoring, Sponsorship, Coaching and Networking
<ul style="list-style-type: none"> • Had a helpful mentor on her first job out of college, admired her management style, and tried to emulate her. • Was given a professional coach at current job. • Continually attend professional networking meetings outside of work. • Currently is not mentoring others, but would like to start.
Boys Behaving Badly
<ul style="list-style-type: none"> • Has always worked in all male IT departments, and with all male executives. • Has difficulty getting the respect of men in higher level positions, believes they exclude women because they just want to make joke about women, and not worry about offending them. • Continually push her boss to get visibility within the higher ranks so that they can get to know her better.
Work, Life, Family
<ul style="list-style-type: none"> • Takes time off from work; vacation leave.
Set-backs , eye opening experiences, and/or catastrophic situation(s)
<ul style="list-style-type: none"> • See comments in Boys Behaving Badly section.
Future Plans
<ul style="list-style-type: none"> • Want to be part of the top leadership circle in a company as a CIO or VP of IT, in a role that is recognized as one of the top priorities of the company. • Want to be in a top executive position where she can influence others.
Advice to Women in IT Fields
<ul style="list-style-type: none"> • Become a technical expert. • Be a good communicator, and team builder—you get valuable leadership experience when you can effective teams. • Push for visibility in the company. • Plot your own career path, and take the steps to make it happen. • Seek out a sponsor-someone to advocate on your behalf.

P6 is Caucasian, has been in a leadership capacity, as the president and owner of her technology company, for 26 years. Prior to that, she held leadership positions in a large technology company. She is married, and has three children. P6 is passionate about mentoring women. She enjoys the Opera, traveling, cooking and speed-walking. Table 8 provides a profile of P6.

Table 8.

P6 Participant Profile

Education, Work Experience, Leadership Level, Time in Current Job, Geographic location
<ul style="list-style-type: none"> • Is an Engineer with an MBA degree , and a finance and marketing background • Currently is the President of her owns, and works in the private sector. • Has been in her current leadership position for 26 years. • Has over 37 years of ITexperience. • Lives in the Midwestern region of the U. S.
Leadership Development
<ul style="list-style-type: none"> • As a System’s Engineer, she spent 18 weeks in the classroom learning everything about sales and presentation, which were helpful training for leadership. • First management job was also her first leadership job. • Attended extensive formal leadership development training through her employer. • View leadership development as something that she is always building. • Always on the lookout for professional leadership development workshops and seminars.
Making a Paradigm Shift
<ul style="list-style-type: none"> • Believe leaders must make the shift to strategic thinking—be mindful of it, don’t lose sight of it, and set time aside to for it, be effective at preparing presentations and presenting, staying on message and listening is critical. • In her experience, leadership development changes over time, and leaders must focus, and shift with it to stay relevant. • Believe it is important to stay tuned into what kind of organization you are being asked to lead—it’s an important message for leadership development. • Transforms her organization every 3 to 4 years based on industry changes, and the demands of clients..
Mentoring, Sponsorship, Coaching and Networking
<ul style="list-style-type: none"> • She was mentored by her father, and learned a lot from him about how to run a company, and about leadership. She also learned a lot from the CEO, her boss, at another company about leadership. • Leads a mentoring program where she creates groups of 4 mentees and pair them with 2 mentor.
Boys Behaving Badly
<ul style="list-style-type: none"> • Experience has been that IT is mostly men, which is challenging, especially in her area of expertise; infrastructure. • You have to be able to handle a testosterone driven organization, and not take it personally. • Believe that women must insist that men behave in a non-sex level..
Work, Life, Family
<ul style="list-style-type: none"> • She followed in her father’s footsteps, first as an engineer, and later as a business owner. • Believe that when women pay the price for having families, their career takes a back seat. Sometimes when they return to work, they have to start all over again, at lower paying positions.
Set-backs, eye opening experiences, and/or catastrophic situation(s)
<ul style="list-style-type: none"> • See Boys Behaving Badly section
Future Plans
<ul style="list-style-type: none"> • Exploring the possibility of changing out and transforming her business.
Advice to Women in IT Fields
<ul style="list-style-type: none"> • Pay attention o where the world is going, it is not standing still. • Be flexible—how we do business today is not how we will do it tomorrow. • Learn the language.

P7 is a Caucasian, married and has three adopted children. She in her early fifty's. She spent many years in the armed forces where she held leadership positions. In IT, she had made many lateral moves to strengthen her leadership. S enjoys crafts, horses, marital arts, history and learning. Additionally, she is a 30 year volunteer for two major non-profit organizations. Table 9 provides a profile of P7.

Table 9.

P7 Participant Profile

Education, Work Experience, Leadership Level, Time in Current Job, Geographic location
<ul style="list-style-type: none"> • Has a J.D, and a Ph.D. • Currently a Director of IT in a private sector company. • Has been in her current position for over one year. • Has over 13 years of IT experience. • Lives in the Midwestern region of the U.S.
Leadership Development
<ul style="list-style-type: none"> • First leadership job was as a volunteer, and was able to informally develop leadership skills mostly through keeping her eyes open, figuring out what worked, what didn't work. • Formal leadership development was in the armed forces, and was extensive where she became a commissioned officer. • Believe that both formal and informal leadership development have strong points; you must do the informal things, read and stay current with IT trends. A person would be foolish not to do both.
Making a Paradigm Shift
<ul style="list-style-type: none"> • Has always adapted to, and focused on whatever is required. • Was assigned a high visibility project to fix security, which she did not know what it meant at the time, and was not prepared for. Had to ramp up quickly. • Believe that the number one job skill is delegation—learned how to delegate and trust team members. • Learned how to manage employees working globally; in different time zones, and with different cultures. • Because of global responsibilities, and an expansion in her areas of responsibility, shifted how her time was spent.
Mentoring, Sponsorship, Coaching and Networking
<ul style="list-style-type: none"> • Her boss is sponsoring her, and enrolled her into a leadership development program that prepares individuals for higher level executive positions within the organization. • Currently mentors two women; one through a formal mentorship program, and one who asked her out of the blue, after seeing her speak.
Boys Behaving Badly
<ul style="list-style-type: none"> • Experienced cultural barriers, discrimination, micro insults and discrepancies, and many micro discriminatory actions, not only in IT but also in the armed forces.
Work, Life, Family
<ul style="list-style-type: none"> • Deals with getting calls at 2am because of her global leadership responsibilities, which is disruptive for her personal life but have to deal with it.
Set-backs, eye opening experiences, and/or catastrophic situation(s)
<ul style="list-style-type: none"> • During a military training exercise, as a result of an order that she gave, some troops went deaf, and \$2 million dollars of equipment was damaged, after she told an expert to use significantly more explosives than was required. • Faced prosecution, which could have ended her career, charges were dismissed and she was found not guilty. She learned a tremendous lesson—don't ever tell an expert how to do their job.
Future Plans
<ul style="list-style-type: none"> • Interested in becoming a Vice President.
Advice to Women in IT Fields
<ul style="list-style-type: none"> • Have a dose of humility. Walk a fine line of confidence, and still be humble. • Do your homework.

P8 is Caucasian in her early 50's. She is recently married to her partner of many years. P8 is new to her leadership positions and has been in it for a little over a year. She would like to work for a large company because they have more opportunities than smaller ones. P8 is a volunteer at a nonprofit organization that provides housing for people in need. She shelters rescue dogs, likes traveling that is usually combined with hiking, yoga, broomball, golf and music. Table 10 provides a profile of P8.

Table 10.

P8 Participant Profile

Education, Work Experience, Leadership Level, Time in Current Job, Geographic location
<ul style="list-style-type: none"> • Has an MBA. • Currently a Senior Director of IT working in the private sector. • Has been in current leadership position (passage 5) for over a year. • Has over 13 years of IT experience. • Lives in the Midwestern part of the U.S.
Leadership Development
<ul style="list-style-type: none"> • First experience with leadership was as a supervisor. • Although her boss was supportive, there wasn't a leadership preparedness—just jumped into the role and figured things out—deep end of the pool, school of hard knocks. • Took on a high visibility, high impact project that was moving at the speed of light, learned how to trust others on the team to get the job done. • Believes that both formal and informal methods of preparation are important because they complement each other.
Making a Paradigm Shift
<ul style="list-style-type: none"> • Moved away from tactical thinking as an individual contributor to strategic thinking. • Believe an important skill is creating a vision—you have to know where you are going, and get everyone on the same page. • Spend 50-70% of time working with business and management within IT to lay out an IT roadmap. Remainder of time is spent on building relationships (i.e., vendors).
Mentoring, Sponsorship, Coaching and Networking
<ul style="list-style-type: none"> • Has mentored women in IT, would like to mentor younger women who are just getting into STEM. • In her current role, she has received professional coaching over the last 3 years. • Currently enrolled in a CIO mentorship program to prepare for her next career move • Network with others about the CIO role.
Boys Behaving Badly
<ul style="list-style-type: none"> • Doesn't think much about with a woman minority, although she is the only woman on her boss' team. There is another woman in the company, who is the Asia Director—two women directors out of ten men directors is not a good percentage.
Work, Life, Family
<ul style="list-style-type: none"> • Takes off work to travel, Spend time during physical activities (exercising, hiking, etc.).
Set-backs, eye opening experiences, and/or catastrophic situation(s)
<ul style="list-style-type: none"> • Was eye-opening to realize that her leadership would have been scarred forever, if an individual that she trusted on her project team had failed.
Future Plans
<ul style="list-style-type: none"> • Interested in becoming a CIO.
Advice to Women in IT Fields
<ul style="list-style-type: none"> • Be competent. • Find someone to emulate and expand your toolkit. • Keep people apprised of your value; don't assume they know.

P9 is Asian, in here early 50's, and has a domestic partner. Had leadership positions in the business areas, prior to getting and IT executive leadership role. She enjoys running and biking, and is involved in STEM education. Table 11 provides a profile of P9.

Table 11.

P9 Participant Profile

Education, Work Experience, Leadership Level, Time in Current Job, Geographic location
<ul style="list-style-type: none"> • Has a bachelor's degree. • Currently is an Executive Vice President/CIO in the private sector. • Has been in her current position over eight years. • Has over 22 years of IT experience. • Lives in the Southwestern region of the U.S.
Leadership Development
<ul style="list-style-type: none"> • First leadership position was on the business side, not IT. • There was no formal leadership preparation in her first leadership position or in her current role in IT. • Believe both formal and informal leadership development is important.
Making a Paradigm Shift
<ul style="list-style-type: none"> • Experienced CIO role has changing over the years, and is still changing drastically. • Learned how to adjust because of leading a global team in different times zones such as Europe, Asia, and the U.S. • Made shifts in schedules to accommodate one on one meetings with employees in different time zones across the globe. • Is confident in her leadership abilities. • Learned how to deal with business partners, peers, board of directors, customers, shareholders; had to learned all aspects of the business to be effective dealing with all constituents.
Mentoring, Sponsorship, Coaching and Networking
<ul style="list-style-type: none"> • Although her boss said that she was being mentored along, it was not obvious to her that she was being mentored. • Was mentoring two women, who both exited IT, one went to work in the husband's business, the other went back to school to become an executive coach.
Boys Behaving Badly
<ul style="list-style-type: none"> • After starting a new leadership position, a male subordinate was upset that she had gotten the job instead of him. He approached her to tell her that she only got the job because she was a two pointer; a girl and she wasn't a White man.
Work, Life, Family
<ul style="list-style-type: none"> • Being a global leader interfered with personal life; had to hold staff meetings and conduct business from home at weird hours with staff in Asia or Europe.IT • An IT woman she was mentoring left IT because she needed more flexibility; her kids were starting school, and she wanted to do cupcake day with them, and be active in their school activities that occurred mostly during working hours.
Set-backs, eye opening experiences, and/or catastrophic situation(s)
<ul style="list-style-type: none"> • Had two major incidents in her career that had an impact on her leadership development. • Was scheduled to attend a meeting in New York at the Trade Center the day the towers fell but the meeting was cancelled. • Had a team of 10 employees in New York that was directly impacted by 9/11. • Had to continue working in Emergency Management mode under extreme pressure, keeping everyone calm, without knowing the outcome of her employees in New York.
Future Plans
<ul style="list-style-type: none"> • Plan to leave CIO positon, and start a consulting business.
Advice to Women in IT Fields
<ul style="list-style-type: none"> • Need to be able to understand the business, it's not good enough to just understand the technology.

Analysis

This section describes the findings produced at each step of Moustakas' (1994) framework. A total of nine participant interviews were conducted using a combination of email and the telephone. Three interviews were distributed by email, and responses were returned in MS Word format, which needed no transcription. Six participant interviews were conducted by phone, were sent to a professional transcriber, and returned in MS Word format. Once all participants' transcriptions were completed the researcher analyzed the transcripts by using the following steps, which consisted of (1) listing and preliminary grouping, (2) reduction and elimination, (3) clustering units of meanings and thematizing the invariant constituents, (4) final identification of the invariant constituents and themes by application, (5) individual textural descriptions, (6) individual structural descriptions, and (7) synthesis of textural and structural descriptions. The findings from the composite description of the meanings and the essence from the knowledge derived from the lived experiences of the nine participants were used to communicate the views and lived experiences of the nine participants as they relate to the following research questions:

1. What are the lived experiences of women in IT fields as they transition into middle level management (passages 3 or 4) and/or executive level leadership (passages 5 or 6) positions as identified in Drotter, Charan, and Noel's (2011) conceptual leadership development pipeline model?
 - a. What are the changes in time application during those transitions?
 - b. What are the changes in skill sets during those transitions?
 - c. What are the changes in work values during those transitions?

Data analysis began with the following seven step process developed by Moustakas (1994) to develop themes.

Step One: Listing and Preliminary Grouping

All participant interviews were transcribed verbatim, and imported into NVivo 11—a computer assisted qualitative data analysis software program. NVivo 11 was used to identify statements that were relevant to the lived experiences of women in IT as they transitioned from one level of leadership to the next. After review of each participant's transcript, line by line, all words and statements relevant to the study were extracted. All relevant statements contributed to their experiences were treated with equal importance. This process produced 837 words and statements.

Step Two: Reduction and Elimination

Invariant constituents are determined through a process of reduction and elimination. In this step, the researcher reviewed the data constantly and conducted a test by asking the following questions suggested by Moustakas(1994):

Does the expression contain a moment of the experience that will help to understand it? Can it be extracted and labeled? If so, it is a horizon of the experience. Statements and labels that did not meet the test criteria were eliminated (p.121).

This step was used to further develop clusters of units and meaning, which resulted in seven themes (see Appendix F).

Step Three: Clustering and Thematic Development of the Invariant Constituents

There were forty eight individual invariant constituents, which were grouped under twelve broad categories; a) education, b) time in current job, c) total IT experience, d) leadership development, e) future plans, f) making a paradigm shift, g) boys behaving badly, h) work , life and family, i) mentoring, sponsorship, coaching and network, j) advice to women in IT fields k) leadership level, and l) set-backs, eye opening experiences, and/or catastrophic

situations (see Appendix G). These categories were then renamed for specificity and clarity. The final grouping of clusters and theme development of the invariant constituents resulted in seven themes, (1) formal and informal leadership development, (2) mentoring, sponsorship and networking, (3) IT workplace and cultural challenges, (4) purposeful and strategic thinking, (5) managing transitions and self-renewal, (6) work life balance and family influence, and (7) strength and resilience (see Appendix F). No themes had a higher ranking over another, all things were given equal importance. The next section presents the seven themes of this study.

Theme 1: Formal and Informal Leadership Development. The majority of participants were involved in some method of formal and informal leadership development. This theme was determined by participants using one or several of the following leadership development methods: attended formal leadership development training, worked one on one with their immediate supervisor, acquired a professional coach or mentor, took management courses at a university, joined a professional networking organization, self-study and learned by trial and error with limited to no leadership development assistance from their immediate supervisor, or the organization. Eight of nine participants stated they attended formal leadership development training, were in a leadership development program and/or a university master's degree or certificate program. All participants shared they had various methods of informal leadership development. Following are multiple excerpts by participants regarding their formal and informal leadership development experiences.

Pertaining to formal leadership development, the formal leadership preparation shared by participants ranged from attending a master's and/or a MBA program at a university to participating in leadership development programs. P1 said,

I was in the midst of obtaining my master's degree and I think that that was probably the

*closest to the most **formal [leadership] preparation.***

Later, after working in an academic setting for a long time, she said about her leadership preparation,

*...I consider myself fortunate in that particular field there is a lot of focus on preparing the next generation of IT leaders. ...I was fortunate to participate in a number of **leadership development courses.***

P2 said,

...one of the things my first boss did he sent me to all kinds of training which um was you know really rare. Nowadays companies just don't make those investments in people in the same way.

P3 shared,

*I had obtained a four-year degree (Bachelor of Science in Computer Science). I believe this taught me critical thinking and decision making which were key to my first leadership position. Early on, **I learned the Steven Covey time management and goal setting techniques** which have helped me throughout my career.*

P4 described her experience saying,

*I was at Company D, and they had a new Manager class...they had **formal leadership training.** Formal training included crucial conversations, leadership style, coaching, presentation skills, and lastly messaging skills.*

P5 explained her experience, and said,

*While in my current position, **I took a leadership class with my peers that was offered internally,** I had a 360 analysis and I was also given a professional coach that worked with me on developing my leadership skills.*

P7 described her experience in the armed forces as follows:

*In the military...there is a very **formalized educational process for teaching leaders.***

The U.S. Army is one of the best leadership schools in the world and they take their time.

They recognize that it's not something you learn overnight.

The experiences shared by these participants, although from different types of organizations indicate the significance of leadership development across various organizational sectors, and the importance that organizations place on their leaders.

Regarding informal leadership development, all of the participants engaged in informal leadership preparation, ranging from self-study and networking to taking other positions to acquire the needed skills. On the job, P2 said,

*There was no **formal leadership preparation**, I followed my inner voice and **inner guidance.***

P4 said, in order for her to become more effective as a leader, she took various positions, and explained it in the following manner.

*I **informally prepared by obtaining positions of greater responsibilities** until I was promoted into leadership. I was the Chief Technology Officer (CTO) at a fortune 100 company. This exposed me to senior leadership and prepared me for the CIO [Chief Information Officer] role.*

P8 said,

*...**there wasn't a preparedness.** It was more of jumping into a role and figuring it out as I got there and having my boss provide some good support but really...it's on the job, deep end of the pool, school of hard knocks.*

P7 worked as a volunteer, she learned leadership skills through trial and error approaches. She felt fortunate because with volunteerism, organizations are more tolerant of mistakes. She expressed her experiences in the following way.

My first leadership position came because nobody else wanted to do it. It was volunteer work. I stepped up. Um and that was in an informal way of developing skills because when you're dealing [with]...volunteer non-profit organization, they're pretty forgiving about mistakes and you live and you learn. You know keep your eyes open, figure out what worked, what didn't work and you learn and you move on. So that's really the informal [leadership preparation] process.

P9 shared,

Well, for my very first leadership position, there was no preparation, I don't think there was never really any formal [leadership preparation].

As expressed by the participants there are many types of informal leadership preparation methods available. The participants designed and pursued their own informal leadership method based on their needs, which was beneficial in helping them develop and/or strengthen their leadership capabilities.

Relating to effective leadership development method, five of nine participants indicated that both formal and informal methods of leadership development were effective. Two of nine participants went through formal leadership development training. Two of nine participants stated that they had no formal methods of leadership development. Eight of nine participants believed that both formal and informal methods of leadership development are essential. Four of nine participants were assigned high visibility assignments, which they considered essential to their leadership development and success, although they had received insufficient or no prior preparation when the assignment was made.

When asked whether informal or formal leadership development was the most effective leadership preparation for them, the participants had varying opinions and perceptions based on

their experiences. P3 shared the following:

*I believe both [formal and informal leadership development] methods are equally valuable and bring different skills and knowledge. However, if I had to pick one, **I would say that experience (informal) over education (formal) is more effective.** What you experience stays with you more and impacts your life more than what you learn in a formal environment.*

P7 added,

*Uh...**they both have strong points.** In the formal education, you're gonna be presented with things that you wouldn't have thought of otherwise.*

P8 said,

*I think you actually have to do both at times. If you don't do the informal things, read, and stay current with trends in IT... **I think it actually would be the informal to stay current with trends and be mindful of what the formal leadership things are on an ongoing basis** but I think you would be foolish not to do a combination of them.*

P5 said that formal leadership preparation was most effective and stated that

*The **360 analysis** was the most helpful.*

P4 expressed the importance of getting feedback and thought that informal leadership preparation was the most effective because she could get feedback on how she was performing. She said,

***Asking for feedback** is the best way.*

High visibility assignments generally fall under formal leadership development because individuals receive formal training and are groomed to take on such assignments. However for this study, it is categorized as informal leadership development because the participants had insufficient

formal training and no grooming to take on such a high visibility assignments, which were tough assignments, and subject them to an on the job training approach. P2 shared her experience in the following way.

*So I got called in to the office by the VP and he's like hey, guess what? **You're gonna go fix security** and I'm like...I'm like what? And he's like yeah, you're gonna go fix security and I was kind of like okay and I didn't really know what that meant. Something inside me said...Just do it... this is one of the times I did listen to myself. I can't imagine having not said yes because [when] I look back and everything [in my career] since then has been nothing but positive.*

On another occasion, she said,

*I learned to jump...here at Company B where we had a huge effort that for various reasons got off track and um **I had to step in and lead the effort and it impacted the entire...company** and certifications are a key element for us to differentiate ourselves in the marketplace*

P3 shared,

...it was decided that I would oversee the Data Security division. I did not have experience with this area.

The quality and type of leadership development method—formal or informal and /or whether the participants had an opportunity to have a high visibility assignment, which had a successful outcome played a significant role in how the participants determined which leadership development method was the most effective.

Theme 2: Mentoring, Sponsorship and Networking. The majority of the participants indicated that they had a mentor, coach or sponsor. Some participants mentored other women and at least one participant had not started mentoring at the time of this study.

Two of nine participants had a mentor or a sponsor. Three of nine participants had a coach and/or was able to tap into their professional networks. Two of nine participants stated that they did not have a mentor, sponsor or coach. Four of nine participants expressed they had individuals they mentored. In terms of mentorship, six of nine participants were not participating in any formal type of mentoring, at the time of this study, however they believe that mentoring is important.

The participants had varying degrees of mentorship, coaching, sponsorship and networking experiences. This experience also included whether they were mentoring, coaching or sponsoring others. The participants expressed their experiences as follows:

P1 who did not recall having a mentor said,

*I wouldn't say in my career I've ever had a person that I would consider a mentor so **I did not have a mentor** that uh, you know helped me along but being observing to leaders that I thought were admirable. Also, one thing that has worked for me ... um, I've been very active in networking organizations, particularly networking organizations that focus on women in technology. ...you get exposed to many different types of leaders and many different perspectives and I think that, the benefit for me is that I was able to pick up a lot of different perspectives.*

P9 said,

*Uh, you know and even though your **boss may say well, you were mentored along, it wasn't obvious to me if I was being mentored.***

P2 who had a sponsor recalls that

*...having a **sponsor** and someone who's basically gonna go to bat for you is critical.*

P8 had a coach and said,

*...one of the things he did is get his leadership team aligned with a **coaching** organization that is available to me.*

Other participants shared their mentoring and networking experiences. P4 said,

*Yes, I do [mentor others]. I believe **mentoring is very rewarding** and anything I can do to help others break through the glass ceiling is great.*

P5 recalled,

*I had a **mentor** at my first job... I kept in touch with her over the years...I admired her management style and her success and I tried to emulate it. [Regarding mentoring others], now I have not had the opportunity to do that [mentor others].*

When asked about their networking experience, P3 said,

*My **networking** with other CIOs has helped me tremendously.*

Mentoring, coaching sponsorship and networking were essential factors in helping the majority of the participants become successful as leaders. Although many of the participants were active in networking, they were not mentoring others in a formal capacity at the time of this study, although they would share advice with other women on leadership from time to time.

Previously, they were involved in mentoring and coaching others and have plans to continue mentoring and networking in the future.

Theme 3: IT Workplace and Cultural Challenges. The majority of participants stated the IT workplace and culture can be difficult to navigate mostly due to a gendered workplace and resistance women face from men. The participants reported concerns about the lack of women in IT fields, especially in the IT executive ranks. Eight of nine participants shared they had either observed and/or directly experienced disparaging and inappropriate remarks and comments, and believed that they lost a job promotion and other opportunities

because of their gender and gender-related issues. Eight of nine participants shared they personally experienced, or directly observed negative attitudes and behaviors towards women in the workplace. All of the participants experienced gender-related issues, such as gender bias and gender discrimination. Seven of nine participants explicitly or implicitly implied that the culture of IT is tough and unwelcoming for women.

All of the participants recognized that women are underrepresented in IT, especially at the executive leadership level. All of the participants expressed that it is hard for women in IT to get promoted to executive leadership positions. Working in IT male dominated environments presented a range of challenges for the participants such as bias, discrimination, negative attitudes and behaviors aimed at them and other women in IT fields.

Relating to negative attitudes and behaviors, P2 said,

*... it's right away men, they start **labeling a woman negatively**. **Right away, all of these negative things come out**. Like you know, she's pushy, don't have a personal life, you know, all kinds of stuff that's like never I hear men labeled that way.*

For many years she also observed and was on the receiving end of many of the challenges that women face in the IT workplace and culture, she describes her experiences as follows:

*I think in some ways it's gotten worse because there is no concept of political correctness, people are revolting against it...I call it the **boys behaving badly is getting worse** ... I remember somebody told me the only reason I got the job was because of affirmative action and I was like really?*

She also talked about less value being placed on the knowledge and technical abilities of women in IT fields, she explained,

They [men] relegate you as a woman who doesn't really understand technology and

therefore, [a woman] is kind of worth a little less. They relegate them [women] to a lower level of authority...that impacts compensation [and] movement in the organization.

*There's no pressure for them you know no regulatory or no oversight on the fact that they don't have diversity at their leadership level. You know it's kind of sad but I don't think it's changed a ton. **I think it's worse.** You could go on any site and look at their leadership team.*

P4 described her experience with vendors and said

***I have been in meetings with vendors where the salesman never makes eye contact with me, and tries to sell the technology to the men.** It was pretty funny when they found out that I was the boss.*

P7 described how women were not properly introduced the same as the men at a meeting that she recently attended.

*...so it was a meeting of two different IT teams. My VP introduces both the men and women by their first and last names. **Their VP introduced the men by their first and last names and the women only had a first name.** I checked later [with] my fellow female managers and directors, they said, wow I didn't see anything unusual and I said, that in itself is sad that you didn't notice it as being unusual and they went yeah, you're right...if it's so commonplace that you don't notice it you've got a problem.*

Regarding the underrepresentation of women in IT, there is poor representation of women in IT fields and especially in IT leadership roles. Many of the participants were concerned about the lack of women in IT fields and at executive levels in IT. P1 said

I do observe exactly...fewer women at the higher levels and it's a little bit of maybe

a leaky pipeline. We're never equally represented.

P4 commented

*It is uncommon to see women in IT, which I just do not understand why... I am typically the **only woman in the room**.*

P5 described her experience working in a male dominated environment by sharing the following.

I have always worked with all male IT departments and with all male executives. It has [been] more difficult getting the respect of the men at higher levels. They don't seem comfortable with women. I get the impression they want to be able to joke around and not have to worry about offending a woman. I continually have to push my boss to get visibility within the higher ranks so they can get to know me better.

P6 said,

*My challenges in IT, is mostly men, and **when you work in the area of infrastructure, that's almost all men**. I do a lot of work in infrastructure. You just have to handle being in a very testosterone driven organization. You can't take anything personally.*

P8 did not think much about working in a male dominated environment until the question was presented. Her comment follows.

*I guess part of the thing is I don't think much about being a woman minority even though I am. ...**I'm the only woman on my boss's staff** but I don't think about it as often as maybe I should.*

Many women in IT fields report gender-related issues. Many of the participants in the study shared their experiences of their encounter with bias and discrimination, which they

attribute mostly to their gender. P7 described experiences that she observed over the years, and in some cases, of which she has been the target. Her recollection follows.

*There is discrimination in a male-dominated environment and trust me when I tell you the armed forces is a male-dominated environment. Culture barriers...I of course have seen all of the **little micro insults** that happen. You know ...talking over me when [I am] presenting an issue. **I can come up with so many micro discriminatory actions.** I was at a meeting yesterday where I said something and it was discounted and five minutes later the guy across from me said the exact same thing, [and they said] Oh, that's a really good idea!*

P3 shared an experience that she had in college, which contributed to her being a woman.

*During college, I was one of two Caucasian blond females in Electrical Engineering at the university. I would walk into a lab, and know, as each person walked in that **no one wanted to sit next to the girl and have her as a lab partner all semester.***

Sometimes gender bias is disguised under the premise of a jest or joking, which P4 experienced.

*A few years ago...I walked down to a networking picnic with all of the clients and consultant team members. One of the client team members was making small talk and said, **I know you are an engineer. What happened? Didn't your father have any sons?** It was a serious question. Not really sure what to say, I responded, all my father's children are engineers: me, my brother and my sister.*

The IT workplace and cultural challenges for many women are difficult to navigate.

Several participants indicated that they face IT workplace challenges in the following ways. P9 shared,

When I first came to Company I ...as a leader there, I remember that the team that I

*was leading— there was a guy in there. He was really angry because he had apparently applied for the job but he didn't get it ...I remember coming in he said this to me when I first met him. **He goes well you know why you got the job? He goes, it's cause you're a two-pointer, and I said I beg your pardon? He goes because you're not white and you're a girl.***

P2 said,

*If you're not assertive enough you get labeled as, oh she's really nice but really not leadership material. So [women] they're in a tough spot because you have to figure out, how do I balance in the middle somewhere, not too wimpy but at the same time people still like me. **It's just very difficult and men don't have that same problem.***

P4 shared,

*... since I don't look like what I am – meaning that I don't look like the geek squad guy. I always think twice **It's always tough.***

The experiences of the participants represent only a few examples of various kinds of workplace and cultural challenges that women in IT fields face when working in male dominated environments. Not only do gender related issues occur in the IT workplace, it can also occur when working with individuals who are conducting business with the company, such as vendors, and in external settings such as in the academic classroom.

Theme 4: Purposeful and Strategic Planning. Despite the obstacles the participants faced, they were purposeful and strategic regarding their leadership preparation. Some participants gave careful consideration to their next career move, and how they would gain the necessary skills and competencies required at the next level of leadership. They demonstrated purposefulness and strategy while enhancing, and bolstering skills that were lacking,

specifically making lateral moves to acquire new skills, and expand their leadership knowledge, role modeling strong women leaders in IT, and developing a personal career leadership development plan—regardless of whether it was a written roadmap, or a mind map. They believed sharing their strategies with women in IT fields would help them be successful.

Regarding strategies used, the participants shared advice they believed contributed to their success as a leader. Many of the contributing factors they described were new skills they acquired. All of the participants shared skills they strategically developed to enhance the quality and effectiveness of their leadership, such as good communication, listening and collaboration, effective presentation skills, strategic planning, teambuilding, coaching, ability to delegate, effective negotiation, as well as motivational skills (see Theme 5). Additionally, competence, technical expertise, political and business savvy, self-awareness, and self-advocacy, acquiring mentors, coaches and joining and/or developing professional networks (see Theme 2) were essential to their success.

Three of nine participants shared their experiences on how making lateral moves help them in their leadership development. Three of nine participants emphasized the importance of developing a personal leadership strategy for their career, and evaluating it at least annually. Five of nine participants expressed their work life and family influence had an impact on their leadership, and it was important to have a strategy for managing work life balance. Excerpts from participants on what they consider as essential qualities contributing to their success as a leader are expressed in the following ways. P1 described,

*I think for me one of the things that worked well is that I move. **I did many lateral moves in the organization so I had every kind of hole in my resume filled before I moved up across the organization.** So I think being...**I would give this advice to***

*anyone but it may be especially true for women, being willing to take a lateral move where you can **learn some new skills**. It is a really positive move in your career.*

Key advice that P1 wished she had followed earlier in her career.

I would encourage women when they're looking to make changes in their career to be very thoughtful about negotiating and advocating for themselves at that time so that they put themselves in a better position to move into the higher [executive] ranks. If I have one piece of advice to give the younger me, I wish I had given myself the advice of negotiating on my own behalf.

P2 shared her observations about the leadership qualities that she saw in other women in IT leadership positions that she applied to herself.

*The strongest leaders I've seen women in IT have some strong technical foundation. That doesn't mean they have to be an engineer. It just means they have to have some kind of expertise. **They need to publicize their expertise. They need to write articles and they need to be out there and visible.** Women work behind the scenes a lot and they don't actually expose themselves. **They need to have a branding plan for themselves. They need to advertise who they are and what their skills and capabilities are.** Men do this all the time. Men advertise skills they don't even have.*

P6 commented,

*... as your responsibilities rise in an organization. You have to set time aside for...what I find is that you **have to be really mindful and set time aside to do the strategy work** and not lose sight of that.*

P7 shared,

Uh, IT is a universal thing but IT is one of those things like finance or HR or manufacturing...the discipline is universal but the specifics of the industry are different,

and so...I specifically went after learning the aspects of the industry.

P9 explained the importance of having a strategy to deal with different constituents and said,

*...from a global business perspective...when you're in a more senior leader position you're dealing with business partners and potentially you might be dealing with customers of the company as well...you have to learn **how do you deal with your peers?***

How do you deal with the board of directors? How do you deal with customers?

P8 talked about the need for women to find someone to role model. She stressed the importance of women in IT fields developing a leadership toolkit and marketing themselves.

*You need to be **competent**... **So have your toolkit and then pick somebody to emulate and to expand your toolkit and don't assume that people are gonna notice your good work.** Figure out a way that you're comfortable to keep people apprised of **the value that you're adding** to the organization.*

Regarding next career steps, five of nine participants indicated they plan to move into an executive level IT position in the future. Three of nine participants believed it was important to have a personal career leadership development plan, if you want to move to higher levels within the organization. They made it a point to do strategic planning for their personal career leadership development, and reviewed it often. The development of a personal career strategic plan for leadership development varied among the participants. Six of nine participants had not developed a written personal strategic plan for their leadership development at the time of this study. Four of nine participants have no future plans of moving into an IT executive level position. Following are excerpts from participants that shared their future plans. P4 said,

*Still thinking **I'll be a CIO someday**, not sure where or what size company.*

P5 shared,

I want to be part of the top leadership circle within a company as a CIO or VP.

IT is tightly integrated in all parts of the business and I want be in a role where it is recognized as one of the top priorities for a company. I also want to be in a position where I can influence the future direction of a company.

P3 was not interested in transitioning to another IT position because she had already fulfilled her career goals. She explained,

I am at the top of my career. I hope this is my last job before retirement. I have worked at large organizations and small ones. I am very happy where I am now. After this, I would like to do more with non-profits and volunteer work.

P1 talked about how she had lost out on a job she felt she should have gotten and how that situation presented her with an opportunity to develop a personal career leadership development plan, she described the following situation.

*What was interesting is that the person that I worked for gave me some great advice, uh, you know he and I talked about it and you know I was pretty upset, I was pretty angry and he kind of said, look..., and he was asking why I was interested and I told him I was ready, the way I saw it I was ready for my next career step and I wanted that to be at Company A. And you know he asked why and it was actually quite difficult for me to answer that question and he said, you know, **when you're thinking about your career think about the things you want. Write it down...think about it in a very specific and subjective way.** For example, is it more important for you to remain physically in a particular location than it is for you to take a particular job? **Think about what matters, and that was really good advice for me.** So after I was unsuccessful in obtaining that role [job promotion], **I did just that!***

P8 shared the strategy she used to monitor and record progress on her personal career leadership development plan. She explains,

I'm a person who does New Year's resolutions and goals...[this is] when I do my performance plan for myself...I take that pretty seriously and I also have taken development planning pretty seriously. The one thing that I would say is [to do] an assessment of where you are and where you want to get to ... it's pretty hard to get where you're going if you don't know where you're trying to go... I evaluate the career portion of what I want to accomplish on my development plan.

All of the participants saw the value in having a strategic plan because it is part of their job responsibilities. Six of the participants had a personal career development leadership plan in their minds; although they did not write it down. The participants who had developed a written personal career leadership development plan had a better understanding of what their next steps were, and what areas they needed to focus on to advance to the next level of leadership. Overall, all of the participants were purposeful and strategic. The participants leadership strategies could prove beneficial to women in IT fields who may be struggling and searching for answers.

Theme 5: Managing Transitions and Self-Renewal. There are many transitions that leaders go through, such as the necessary changes that leaders must acquire to fulfill the requirements of their job. For this study, the three critical job transitions or changes in job requirements at each leadership level were changes in time application, changes in skill set and changes or shifts in work values and priorities. All participants shared their experiences regarding changes in job requirements as they transitioned from one level of leadership to the

next. The participants stated that as they transitioned into higher levels of leadership, they acquired new and broader skill sets, which was critical for success. They also shared utilizing different leadership strategies while transitioning to higher levels of leadership. The participants were able to meet the changes required at each level of leadership and manage transitions experiencing a self-renewal process during the transition.

All participants shared how they shifted in managing their time when transitioning from one level of leadership to the next. Eight of nine participants expressed making a paradigm shift from short-term thinking to long-term strategic thinking. One participant, who is relatively new to her current position, implied that she is still transitioning—learning to shift from short-term to strategic thinking. Excerpts from participants are as follows:

When asked about changes in managing time, P1 shared her experience regarding the shift in how she managed her time as she moved up in the organization. She said,

*I do think that **every time you move into a different leadership level you do look at how you spend your time** ... as I moved from a director to a AVP or a VP it became much more about the leadership piece, much more about thinking about the long term and the bigger questions—what are we going to do, not how are we going to do it.*

P4 shared,

*From manager to director, **the change was instead of [spending] time implementing the plan it was [spending time] figuring out what the plan should be,** and [spending time] focusing on how we do it better next time through that process. [Spending time on] improvements rather than just executing.*

P5 said,

*In my current position I am trying to focus more on **IT strategy**.*

P6 said,

*The day to day things changed a lot so some of the changes I had to deal with were for...
...anything that came through my boss who was the CEO... had to be prioritized, and
you know they're often high-maintenance people.*

P7 shared the following,

*The other thing that changed is because your area of responsibility tends to grow the
hours in which things happen tend to expand as well. So for instance currently I am a
manager in each major time zone where we do work... **I am responsible for the working
hours within all the time zones.***

Relating to new skills, participants stated they developed new skills and acquired a broader skill set. P1 talked extensively about the importance of setting a vision and planning, she said,

*You know for me as a leader there's a lot you could say about vision and you know
being able to do **good strategic planning.***

She elaborated on the importance of developing and working on political skills as a strategy, and said,

*...spending some time honing your political skills because as you move higher and
higher in the organization...you can become more exposed to the whole
organization. **It is a political position to be a CIO or to be a vice president.** I would
tell women just **intentionally work on** your communication and your **political skills**
while keeping your technical skills up to date.*

P2 said,

*...communication and presentation skills...definitely a technical aptitude and an
analytical mind...my ability to learn quickly on my own because technology is changing*

*so quickly I think um I mentioned it already, an **acute...self-awareness**, and **understanding of yourself and your strength** and the things you don't do so well and being okay with the things you don't do so well and make sure they don't become a liability.*

P3 said,

*I believe **listening** is paramount.*

P5 commented about having good team skills, she said,

I am a good team builder, collaborator and communicator.** I realized that I need to enlist the help of others to be successful and I can't do all the work myself. **Teamwork makes the dream work.

P6 said that,

*...**preparing a presentation and presenting** and making sure you **stay on message** and everything. So **the ability to communicate is critical and the ability to listen too.***

P7 said,

***The number one job skill you have to develop is delegation and the ability to guide** without micromanaging.*

P8 talked about big picture thinking and helping people to see the vision, she offered,

*You gotta know what you're trying to accomplish and help frame where that is so, really **having big picture skills and how to build a framework that helps people understand** from a business perspective...**to get everybody on the same,** page that's a really important skill.*

As the participants moved up the leadership ladder with increasing levels of responsibility, they made a paradigm shift—changing the way they thought about approaching their work. P1 said,

*I think the **coaching pieces are critical pieces as you get higher and higher in organization.** The coaches and the relationship building piece and so I feel that as you move more and more up in the organization **it becomes more and more about the people skills and that is a challenge to gain those skills.***

P2 shared her experience in shifting from short-term to strategic thinking by saying,

*...you have to **switch your mode of leadership.***

P2 shared,

*I was able to you know position the technology in a way that they actually provided business benefit to our customers so that was actually an example of **a big job change.** I **transitioned** into security so when I was told hey you're gonna go fix security and I had really no idea what that meant so while I was a technical person...just because you're technical doesn't mean you understand really what that means so what I did...I did two things. One is I sought out the people in the company who actually did the job of security and I sat down with them and I talked to them and I told them tell me what you do day to day. I sat in front of a computer with them, I watched what they were doing so kind of like a bit of a job shadowing but really understanding, talking to them about the challenges of what they do, you know how they interact with other people in the company related to their job*

P3 described a shift in her job role, and explained,

*About a year into my first CIO job, the economic recession hit and the focus of **my job changed significantly.** Where I was previously focused on upgrading technology and staffing skills, I had to focus on budget and finance for the next five years. I had to develop creative ways to ensure we maintained the technology with no new funding. It*

was a significant change, but I learned a lot about finance, charge backs, and leadership.

P5 described the following,

*I was working for a company that was going through organizational changes. I wanted to get more involved in the line of business so I volunteered to temporarily manage the planning and scheduling department. This was **completely different** than anything I had done before. I spent a great deal of time getting to know the people in the planning and scheduling department and understanding the challenges they faced. **It was very difficult** because they dealt with customer issues and factory worker performance issues. This was very **different from the types of issues I was used to dealing with.***

She sometimes struggle with balancing immediate results with long term strategic solutions, and said,

*I enjoy programming because you can get immediate results. **When dealing with strategic issues it takes longer to see the results. So I struggle with that because immediate results are valued.** It's harder to see the value when dealing with bigger picture issues because they take longer to materialize.*

P6 shared,

*...it is important that you can make the shift [to strategic thinking] especially as your responsibilities rise in the organization. You have to set time aside for...what I find is that you have to be really mindful and set time aside to **do the strategy work** and not lose sight of that.*

P7 said,

*...my skill set and focus has always had to **adapt** to whatever the industry is asking for*

because the industry changes.

P8 is also relatively new to her current position, and is still transitioning said,

*I enjoy programming because you can get immediate results. **When dealing with strategic issues it takes longer to see the results. So I struggle with that because immediate results are valued.** It's harder to see the value when dealing with bigger picture issues because they take longer to materialize.*

The participants recognized that it was necessary for them to acquire new skills for their new leadership role. The majority of participants made the necessary job changes that were needed at each leadership passage level. One participant, who is new to her leadership role, is still challenged with shifting from operational level day to day activities to focus on strategy thinking and planning.

Theme 6: Work Life Balance and Family Influence. Work life balance and family influence is oftentimes challenging for women because of the many hats that women generally wear such as, caregiver, parent, spouse and other roles outside of the workplace. Although six of nine participants expressed facing challenges when balancing their career and family life, five of nine participants specifically shared their experiences balancing work and personal life. Three of nine participants stated that their family influenced their leadership decision-making, ranging from how they do their work to whether they transition to a higher level executive position. Excerpts from participants regarding how their family influenced their leadership decision making follows: P1 commented,

*I got [the opportunity] to move to three different [leadership] roles and take on increasing responsibility. I had to relocate my family and you know um, change my retirement plan. ...**based on my career I've moved my family, I think this was***

probably my third or my fourth move and when we made this move I talked to my spouse and he agreed we would do one more move and that was kind of it. You know so from my perspective this is my final job.

P9 shared,

*My parents during World War II were put into concentration camps...and my grandparents were as well, and I just remember...this is a very cultural thing probably for me and a lot of people in my generation whose parents were put into those camps. When they come out, I remember being raised to just always...you always needed to be like the best. You were raised to never bring dishonor to the family name and you, especially with my grandparents, ...[said] we want you to be recognized because of your merit and because of your skills and not be treated differently because who...what you look like or the fact that you don't have blonde hair or blue eyes and all that. And so um my focus has always been...**what really drives me is like not to bring dishonor to the family name and so [with] everything you always say, is this going to be a good reflection on me and therefore, my family?***

P7 shares an experience where her workplace responsibilities were sometimes integrated within her personal life away from the office. She said

*... **I am responsible for the working hours within all the time zones. So yeah, getting called at 2am in the morning is not unusual. You have to be able to deal with it.***

P2 described an experience she had with another woman vice president about work life balance. She said,

She was a vice-president at the time...she was pretty high up and I met

*with her and we were talking about **work life balance** and she goes oh, don't. Don't talk about work life balance. I go what do you mean? She goes just remember this, she said, um the company will take from you whatever you give it. And I've actually taken that advice and shared it on with my employees like it's your responsibility to say when to say no because the company's not gonna give you that and **if the company feels like well we need you to work all weekend and you're salaried and you have no family life because of it, that's your call to basically say I don't want to be with that company anymore but the company's not gonna take care of your personal life and the company's not gonna take care of your career.** You run your career and you run your personal life ...those are like I think pretty important factors.*

She continued to express how her family influenced whether or not she took a job, she said *Don't let someone else tell you what your career is and what makes you happy and balancing it all. ...I've passed up numerous opportunities and promotions because I'm just like no, I want to stay here right now. I mean my kids...it's important for my family and I don't want to uproot them and move right now. Now maybe, would I in 5-6 years? Yeah, maybe if they're out of high school.*

Although it was challenging for the participants to strike a balance between work and personal life, it was clear that participants placed their families above their career advancement decisions. In the lives of two participants, cultural upbringing also played a significant role in how they navigated their careers and made leadership decisions.

Theme 7: Strength and Resilience Strength and resilience are several of the significant characteristics attributed to effective leaders. All participants, demonstrated strength and resilience in

overcoming the challenges and barriers in a male dominated culture (see Theme 3). In addition to these challenges, some of the participants faced additional eye opening experiences, which had a profound, and/or catastrophic impact on their leadership development. Six of nine participants stated they faced eye opening experiences that shaped their leadership development. Four of nine participants shared eye opening experiences about the consequences of not developing their management team, avoiding a court martial, a hostile takeover by the government, and their 9/11 experience. Two of nine participants lost out on promotional job opportunities. Participants voiced their eye opening experiences, and how they demonstrated strength and resilience in the following ways. P1 shared an experience she had regarding a job promotion after working 12 years for Company A, by stating,

A higher level position became available and I applied for that position and I was unsuccessful and that was a real turning point for me in my career. Not that I never have been turned down for a role before you know, I was really disappointed. You know I felt that I had done a great job and I sort of deserved that role... I was pretty angry!

Regarding a leadership decision that had a tremendous negative impact, P7 shared a devastating experience that she had in the armed forces that resulted in injured troops, and millions of dollars in damage to military equipment. It was a wakeup call, a lesson for her on what not to do as a leader. It could have ended her career and she could have also faced legal prosecution. She said,

...my first major disaster was also my first real management lesson that stuck with me and has been a guiding principle from then on. Um I'll give you the punch line right off the bat. You never ever, ever tell a specialist how to do their job. You can tell them the

end result you want but don't tell them how to go about doing it. That's the leadership message that I got from the particular experience. Uh, I made brand new commissioned officer, and promoted to lieutenant, and the military decided to test how much bang they were getting for their buck ... they explained, it's a five-day exercise ...in the field with a platoon... they explained... There are no tanks in this scenario for the next five days...so I tell my guys, ditch the heavy artillery. You don't need to bring the really big explosives for anything...Excellent! ... three days in, [I get an order saying] okay your next mission is to stop the tank that's coming down this road....Tank? But there aren't any tanks, you lied to me! [They said] ...rules change. The first thing I jumped to because there is discrimination in a male-dominated environment... I immediately jumped to you're doing this because I'm female. You son of a bitch, and I was livid because...I had literally nothing that will take it out. While I'm sitting here in the middle of the road being completely not tactical I notice that there's this big huge dead pine tree and I look and I go huh, you know if I can make the dead pine tree fall over in the road, that would stop the tank. I go back to one of my specialists there...a 19-year old kid ...a demolitions expert, I...say, hey, can you take a couple det cords and wrap it a couple times around that tree, and when I give you the signal make the tree fall over in the road, and he goes, yeah, I can do that.. A det cord is a cable like a rope, it's about as thick as your thumb and it's flexible but it's an explosive so imagine taking a plastic explosive and running it like a flexible rope. The tank shows up, and he turns to me and says, ma'am, should we blow it now? I say no, no, no, let the tank get closer...he's got this look on his face that says, okay, ma'am, whatever you say. Now I know that look means, I'm missing something, but at the time I was young, naïve and I knew everything...the tank gets

*closer, [I give the order to] blow it up. ...dead pine tree has now become a 70-foot rocket [flying] straight into the air...it slowly arcs its way over and starts to go down..., the tree lands on top of the tank, bending the barrel, the tank stops. **Everybody inside went deaf. ...I realize that my very short career as a lieutenant is probably now over. I ruined a \$2 million tank and um I've exploded a tree and um this isn't a good day for me.***
*[Later] I've got that specialist with his back up against the tree. **I open my mouth to literally chew him out for just all of it. I had just wasted four years of my life learning to be an officer (inaudible), and I open my mouth to bitch him out, and my own words went through my head right before I said something, and it was, okay, take some det cord and wrap it a couple of times around that tree...I take another breath, and I ask him, if I just wanted the tree to fall over in the road, how much det cord would [should] we have used? Oh about 6 inches ma'am. ...we use[d] ...24.5 feet, and there was my lesson in one sentence...never tell the specialist how to do his job! **They did ultimately find me not guilty of the court martial...It was a great lesson [learned]!*****

P3 shared her experience of shielding a direct report from upper management because she thought she was protecting him. However, the strategy she believed to be effective ended with an unfavorable result for that employee. She explained,

*My leadership belief has been one where I try to provide my employees what they need to get their job done and I handle the executive tier, shielding them from that level. When I left one organization, it became clear that this was not the correct approach. **The team I left behind was ill prepared to deal directly with the executives. This resulted in my 'right hand' person losing his job.***

P9 explained,

There are two major incidents in my professional career that I think really had an impact on me as a leader. Uh, clearly.....being taken over by the federal government—that's huge.

She also described her experience and direct encounter with the events that she faced in the workplace during 9/11, which she describes as life changing. She said,

When 9/11 happened...I worked for Company I at the time...I had teams of people all over the world and in particular, I had a team of people in New York. I had about 10 people that actually were in New York. ...ironically I was supposed to be attending a meeting in the World Trade Center on that day and because the business users weren't ready the meeting got postponed, and so I ended up not being in New York on that day, and to this day, I always think you know things happen for a reason and the universe works in mysterious ways.

Nobody really knew what was happening but then I was on the phone with my team when the towers started to fall and I remember them saying, oh my God. The first thing we're thinking about is oh my God what about all the people we know there. Are they gonna be safe? ...that [situation] has made a huge impact, huge impression on me as a person and as a leader.

She added,

I was responsible for maintaining all the systems for Company I, and um some of the Travel related stuff and you know those proved to be very necessary for people who ended up getting stranded because we couldn't travel, um you know, in that kind of setting ,and just making sure that our customers, and you know, and the employees could still be functional to the extent that you can be under those extreme

circumstances.

Overall, despite the numerous obstacles that the participants faced, they overcame set-backs and catastrophic challenges, which were eye opening experiences, and were able to benefit from the lessons learned, share their experiences, move on, and be successful.

Step Four: Final Identification of the Invariant Constituents and Themes by Application

This step was accomplished by reading each participant's interview transcripts, resumes/biographies, LinkedIn accounts, and other pertinent information repeatedly to confirm that the invariant constituents identified and themes developed were relevant to the entire transcript of the participants. As each participant's full record was reviewed, a decision was determined whether there was an explicit expression and whether it was compatible. If not explicitly expressed or if it was ambiguous, it was removed (Moustakas, 1994). The results of this step produced twelve invariant constituents (see Appendix G).

Step Five: Individual Textural Description

This step involved a re-examination of the coded meaning units and themes, analytical notes, a return to the LDP conceptual framework and a return to the research questions. The themes and the invariant constituents were confirmed by using relevant and direct quotes from each participant transcript. By using verbatim statements from participants, the researcher was able to provide the essence of their lived experiences as women in IT leadership as they transitioned from one level of leadership to the next. The result of this step produced a written individual description for each participant, which included direct quotes from their transcripts, which was used to support the researcher's interpretation of their lived experiences (see Appendix H).

Step Six: Individual Structural Description

In this step the individual structural descriptions were developed using the individual textural descriptions of each participant. The individual structural descriptions provide the fundamental basis of the participant's experience. It describes the connection between the participant's thoughts and feelings about being a woman in IT leadership when transitioning from one level of into higher levels of leadership. Through these descriptions, the meaning and essences of the participant's lived experiences were revealed. The results of this step produced nine individual structural descriptions (see Appendix I)

Step Seven: Synthesis of Textural and Structural Descriptions

This step provides a group composite of the nine participants for each theme by combining the textural and structural descriptions of the meanings and the knowledge derived from the lived experiences of the participants as they transitioned from one leadership level to the next. Following are the synthesized textural and structural descriptions organized by the seven themes.

Theme 1: Formal and Informal Leadership Development. The majority of the participants had no formal leadership training when they first started on their leadership pathway. Many reported that they learned through a combination of methods such as, self-study, trial and error, emulated another leader that they admired, networked with others and professional organizations, by asking a lot of questions, and from being assigned highly visible projects and assignments. Later in their career, they attended more formal methods of leadership development training and in some cases, spent a lengthy amount of time in leadership development programs that were offered by the company. A majority of the participants have advanced degrees, such as a master's, MBA degree, which they took leadership courses as part of their academic curriculum (see Table 2).

The majority of the participants believed both formal and informal methods of leadership preparation were effective because they complimented each other. The formal leadership preparation provided a good theoretical and foundational base, whereas informal preparation provided direct hands-on application, proven methods, and sound advice from practitioners. The opportunity to build a team and lead a high visibility assignment reinforced and/or sharpened their leadership skills regardless of whether it was learned in a formal setting or through informal methods. High visibility opportunities, led to promotional opportunities for several of the participants.

Theme 2: Mentoring, Sponsorship and Networking. The majority of the participants had a mentor, coach, sponsor or a professional network. The majority of women were affiliated with a professional development organization such as, SIM and/or EDUCAUSE. The majority of the participants that were mentored or coached expressed they were not mentoring others in a formal capacity due to time constraints, previous bad experiences or frustration with women who appear not to be serious about developing their careers. Others expressed that the higher women rise in the organization, women in lower level IT positions sometimes view them as unreachable. Therefore, it is up to the IT executive to make the effort to connect with them, which can be a challenge. Some participants experienced women dropping from their mentorship program because they went to work in the family business, exited the IT field altogether, pursued a non-IT job, or went back to college to further their education. This demonstrates that mentoring alone may not be enough to ameliorate the retention of women in IT fields.

Theme 3: IT Workplace and Cultural Challenges. All of the participants experienced workplace and cultural challenges because of their gender. They experienced direct

and indirect negative behaviors and attitudes aimed at them and other women. The participants were all concerned about the low number of women in IT and in IT leadership roles. The majority of the participants endured stressful and unprofessional situations such as men making negative jokes about them, being marginalized, not recognized for their expertise, being talked over in meetings, ideas being discounted, presented by a male and then accepted, men confronting them and making disparaging remarks about their gender and/or ethnicity. Other gender-related issues included having to continually push for high visibility assignments and recognition.

Theme 4: Purposeful and Strategic Thinking. The participants used many strategies to become effective leaders. The participants believed that in order to be successful, leaders should strategically develop the following critical leadership skills—good communication, collaboration, presentation, listening and motivational skills, strategic planning, teambuilding, coaching, delegation, and negotiation skills. They also believed being competent, have at least one or two areas of technical expertise, be politically savvy, have self-awareness and self-advocacy were also essential skills. Other strategies the participants used, were making lateral moves, developing a professional network, developing a personal career leadership development plan and evaluating progress often, and last but equally as important, finding ways to strike a balance between work, family and life , and believed that there should be a strategy for how to manage work life balance.

The participants were involved in mentoring, coaching and networking opportunities, and took formal leadership training. They took responsibility for acquiring the knowledge they needed for the job. The majority of the participants developed, and enhanced their strategic planning skills, as well as implemented strategic plans for their organizations. Although the

majority of the participants did not develop a written strategic plan for their own personal career leadership development, they had some components of a career plan in their mind. Some of the participants learned that the absence of a personal career leadership development plan led to unfavorable outcomes such as, not fully understanding what was required at the next leadership level, not recognizing windows of opportunity, not making it known to others what they wanted, and not involving family members, and/or significant others early on regarding how their career choices and aspirations could affect them. These experiences resulted in the majority of the participants becoming more purposeful and strategic about navigating their careers, personal, and family life.

Theme 5: Managing Transitions and Self-Renewal. As the participants moved from one level of leadership to the next, they all experienced various stages of transitions, which included shifts in how they spent and managed their time. The participants' skill sets changed and their primary focus shifted from the day to day activities to setting vision and developing long term strategy. The transitions also included broadening and enhancing their skills such as, communication and listening, collaboration, motivation, and strategic planning skills (see Theme 4). The participants delegated more, developed team-building skills, motivational speaking skills, honed their political skills, focused on building their business acumen, and not just their own division, participated in strategic planning initiatives for the entire company ,as well as setting strategy for their own division, collaborated with other executives, interacted with a broader base of clients, developed hosting and ceremonial skills, which were required for effective interaction with shareholders and clients at social business events.

Additionally, the participants were required to make presentations and develop executive reports for the CEO, other executives and board members, which became a primary

function of their job. Therefore, effective presentation and communication skills were essential. From a technical perspective, since technology is dynamic and changes rapidly, the participants continuously sharpen their technical skills. The participants experienced many transitions required for leadership, including self-awareness and self-assessment of their skills. They made the necessary adjustments in their leadership and technical capabilities, which also brought about a transformation or self-renewal.

Theme 6: Work life balance and family influence. The majority of the participants expressed challenges with work and family life balance due to the pressures that come with their leadership responsibilities such as, being available after hours, being responsible for operations in different time zones including global operations and understanding how to work with employees in different cultures, as well as being effective in crisis management. Some participants interested in transitioning to a higher level position, which meant relocating, chose not to uproot their families. They declined the higher level position— making their families a priority. The participants understood that they had to strategically manage work life balance.

Theme 7: Strength and Resilience. There are many key characteristics of effective leadership. Two are strength and resilience. The majority of the participants had experiences with an individual(s), or had encountered situations that shaped their leadership in a profound way. While many of the participants shared negative experiences, others had positive experiences, such as being able to get great career and leadership advice, and being able to take advantage of great professional development opportunities. Negative experiences, included potential end of career and/or possible incarceration, surviving 9/11, learning to be cautious of what they say and how to say it, losing out on promotional opportunities, and the importance speaking up and letting people know that are interested in a job opportunity. Other examples

include surviving a hostile takeover, and understanding the consequences of not effectively developing direct reports, which can lead to someone losing their job. Additionally, in the workplace, they faced gender related issues such as exclusion, discrimination, being denied a promotion for which they deserved. These experiences demonstrated the strength and resilience of the participants and how they persevered in the face of adversity.

Chapter Summary

This chapter presented the findings on the lived experiences of nine women in IT leadership roles to explore how they developed their leadership abilities as they transitioned from one level of leadership to the next. It included participant demographic information, how the data was collected and the analysis method used to analyze the data. Nine women were interviewed which produced nine transcripts, a combination of resumes/biographies and LinkedIn accounts, memos and field notes were used collectively to make a full record for each participant. The purpose of this qualitative phenomenological study was to explore women's lived experiences in their development as leaders in IT fields. The phenomenology framework developed by Moustakas (1994) was used to explore and analyze how women in IT fields view their world of leadership and development activities, which revealed seven themes about their leadership development experiences. The themes were (1) formal and informal leader preparation, (2) mentoring, sponsorship and networking, (3) IT workplace and cultural challenges, (4) purposeful and strategic thinking, (5) managing transitions and self-renewal, (6) work life balance and family influence, and (7) strength and resilience.

The majority of the participants had no formal leadership training when they first started on the leadership pathway but later in their leadership career were able to participate in some type of formal leadership development. A majority of the participants have advanced degrees, such as a master's and /or MBA degrees and took management courses as part of the

curriculum. The majority of the participants had a mentor, coach, sponsor or network with others in IT executives in their field. The majority of the participants that were mentored or coached expressed that they were not mentoring others in a formal capacity due to time constraints, previous bad experiences or frustration with women who appear not to be serious about developing their careers. The majority of the participants believe that the most effective form of leadership development is both formal and informal because they because of their gender. The majority of the participants endured stressful and unprofessional situations about their gender.

Paramount to their leadership effectiveness was the development of good communication, collaboration, presentation, listening and motivational, teambuilding, coaching, delegation and negotiation skills, which they were strategic in acquiring, which was essential to their success as a leaders. Additionally, all the participants developed strategic planning skills and implemented strategic plans for their organizations. Although the majority of the participants did not utilize those skills to develop a written strategic roadmap for their own personal career leadership development, most of them had a mind map of where they wanted to do and go.

As the participants moved from one level of leadership to the next, they all experienced changes in job requirements—changes in how they spent their time, changes in their skill sets and changed their primary job focus from daily operational activities to strategic and long term planning. The majority of the participants expressed that they struggled with balancing work and personal life with family. The majority of the participants experienced a situation(s) that had a profound effect in shaping their leadership. They demonstrated strength and resilience in spite of obstacles in the workplace such as discrimination, and other gender related issues, the

various job transitions that they had to manage, including managing transition in their personal careers, and family life.

Chapter 5 will present discussion and implication of the findings, limitation of the study, recommendations for future research and conclusion.

CHAPTER 5

DISCUSSION AND CONCLUSION

There is an increasing disparity of women in the IT field, when compared to men, specifically within IT executive leadership roles. The number of women in IT executive leadership lags drastically behind men IT executives and has gone down by five percent since 2008 (Brown, 2013). Despite significant growth in the IT field, women are not growing with it. IT jobs are expected to increase by 1.5 million in the next decade (BLS, 2014). The purpose and central question of this qualitative phenomenological study was to explore the lived experiences of women and how they develop as IT leaders. Beginning with 19 broad interview questions, the researcher explored the lived experiences of nine women in IT leadership positions that lived in the Midwest, Southwest and Western regions of the United States.

In-depth interviews conducted via telephone and email, explored how the participants developed their leadership capabilities. The study focused on changes in job requirements, which includes changes in time application, changes in skill set and changes in work values, as they transitioned from one level of leadership to the next. Participants were women in IT mid-level management and IT executive level leadership that had more than one year of experience in their IT leadership role. Drotter's et al. (2011) Leadership Development Pipeline (LDP) conceptual framework was used for this study. For the purpose of this study, IT middle management roles are referred to as passages 3 or 4, and IT executive leadership roles are referred to as passages 5 or 6 on the LDP model.

The phenomenological analytical framework strategy developed by Moustakas (1994) was used to analyze and interpret data that were collected from participant interviews, resumes, biographies, LinkedIn profiles, and other pertinent data such as professional membership

affiliations, company and personal websites when available. The phenomenological framework was used to explore and analyze how women in IT fields view their experiences of leadership development when they moved from one leadership level to the next. Using this framework revealed the following seven themes about how women in IT fields experience their leadership development: (a) formal and informal leader preparation, (b) mentoring, sponsorship and networking, (c) IT workplace and cultural challenges, (d) purposeful and strategic thinking, (e) managing transitions and self-renewal, (f) work life balance and family influence, and (g) strength and resilience.

Some of the findings in this study validated what was found in the review of literature. New knowledge was also uncovered as well as the identification of future research needs. As shared by the participants, this study highlights the lived experiences of women in IT middle management and IT executive leadership as they transitioned from one level of leadership to the next. Specifically, changes in time application, changes in skill set and changes in work values and priorities. In addition, it highlights many of the challenges women in IT leadership positions face while carrying out their job duties.

Chapter 4 presented the results of the data analysis, and the themes resulting from the relevant invariant constituents, which produced the following multiple discoveries common to the majority of the participants.

- The majority of the participants had no formal leadership training when they first started on the leadership path, but later in their leadership career were, able to attend some type of formal leadership development. All participants had a university degree. The majority of the participants had master's degrees, some participants with MBA degrees, took management courses as part of their curriculum, and other masters

degrees. One participant had both a J. D. and a Ph.D.

- The majority of the participants had a mentor, coach, sponsor and/or networked with other executives in IT. At the time of this study, the majority of the participants that were mentored or coached expressed they were not mentoring others in a formal capacity due to time-constraints, previous bad experiences or frustration with women, who appear not to be serious about developing their careers. However, all of the participants support mentoring, and the majority had mentored in the past.
- The majority of the participants believed the most effective form of leadership development is both formal and informal, especially when given a high visibility assignment.
- The majority of the participants endured and overcame stressful and unprofessional situations because of their gender and/or ethnicity, and demonstrated resilience and strength as they managed those situations.
- The majority of the participants had not developed a written strategic plan for their own personal career leadership development, although components of a career mind map existed in their heads.
- As the participants moved from one level of leadership to the next, they all managed many transitions, changes in job requirements, and acquired the needed skills to be successful.
- The majority of the participants expressed that balancing work and personal life with family was challenging.
- The majority of the participants had a person(s), and/or a situation that had a profound effect in shaping their leadership.

- Good communication, collaboration, presentation, listening and motivational skills, strategic planning, teambuilding, coaching, delegation and negotiation skills were shared by all participants as being critical skills and competencies for an effective leader, which contributed to their success as a leaders. They were purposeful and strategic about acquiring the needed skills.

This chapter also presents conclusions drawn from the review of literature, the methodology, and how the data was analyzed. It includes emergent themes, discussion, conclusion, recommendations for future research, and summary.

Limitations of the Study

Phenomenological studies oftentimes are not generalizable due to a small sampling size (Creswell, 2013). Generalization was limited beyond the sample population because of a small number of participants. To compensate for this limitation, detailed and verbatim descriptions of the lived experiences of women in IT fields as they transition from one level of leadership to the next were used. This detailed level of direct expressions can be used for transferability purposes in making contributions to a broader audience. The second limitation involved saturation occurring earlier in the study. However, the researcher continued with analysis of the remaining three interview transcripts to verify consistency of themes. The themes were consistent. The third limitation of the study was the professional transcriber's interpretation of the transcripts, specifically, where they placed emphasis in the text. To compensate for this limitation, the researcher used member checking meaning transcripts were sent to the participants to review for accuracy. The fourth limitation was the use of email, which did not produce the level of richness that voice conversations produced. The fifth limitation of the study was researcher bias, which was addressed with bracketing throughout the interview and the data analysis process.

Researcher's Epoche

Although it was refreshing to hear the participants' positive experiences, it was very difficult for the researcher to hear the negative experiences that some of the participants encountered because it reminded the researcher of her own IT leadership experiences. During the data collection, and data analysis phases of the study, it was necessary for the researcher to consistently use epoche/bracketing in order to see the participants' experiences through their eyes and voices, and to ensure that researcher bias was not incorporated into the study. More reflection about the researcher's position for this study is available in Appendix L.

Discussion of Emergent Themes

The phenomenology analytical framework developed by Moustakas (1994) provided the basis for the analysis of the major themes that emerged in this study. Clusters of meaning units were grouped together to develop a major idea about multiple themes. Seven themes emerged from the analysis of data, which were relevant, and gave an in depth perspective into the real life experiences of the participants as they transitioned from one level of leadership to the next. Collectively, the themes represent the lived experiences of the participants in this study, and answered the research questions.

Following are the researcher's discussion, and interpretation of themes, as they relate to women in IT fields transitioning through moving from one leadership level to the next. This section also demonstrates how the themes relate to Drotter's et al. (2011) LDP framework used for this study. Some of the themes are interwoven and may not lend itself to a clear demarcation relative to the LDP framework. However, when possible the researcher will make those distinctions.

Theme 1: Formal and Informal Leadership Development

The majority of the participants had no formal leadership training when they first started on their leadership path, but later on, many participated in formal leadership development programs. Some scholars suggest that one of the biggest failures in organizations is the lack of effective training and leadership development, which leads to dysfunctional leadership teams and other problems (Drotter et al., 2011). In the literature review, some scholars also suggested women in IT fields may not adequately be prepared for leadership roles (Egan, 2015; Wentling & Thomas, 2007). The data revealed that during the participants' early years as leaders, most of them were not formally prepared for leadership roles, and some did not fully understand their leadership role or knew what to expect. Most of the participants relied on various forms of informal leadership development methods such as, self-study, trial and error, networking with others and joining professional groups to help them navigate their new leadership role.

Some participants were also involved in informal mentorship relationships and/or utilized other women and men as sounding boards. Although a variety of different leadership development methods were beneficial to most participants, there were mixed messages as to the quality of the informal leadership preparation methods. While some participants reported success, other participants expressed they had a less than desirable experience. This theme also revealed that most of the participants attended formal leadership development training after they were already in a leadership position. Additionally, the majority of the participants had advanced degrees such as MBAs, and took management courses as part of their academic program; one participant had a J. D. and a Ph.D. The educational levels of the participants were consistent with findings in the literature, which found women in IT fields to be just as educated, if not more educated than men in IT fields (NCWIT, 2015; Ramsey & McCorduck, 2005). The data revealed formal leadership preparation along with informal methods, significantly enhanced the

participants' leadership capabilities. According to Drotter et al. (2011), formal and informal leadership preparation are essential when developing characteristics and behaviors that form the basic foundation of effective leadership, and is critical for leadership effectiveness, which encompasses changes in job requirements, changes in skill set, and changes in work values as individuals transition through the LDP.

The majority of the participants believed the most effective form of leadership development was both formal and informal because they complemented each other. This study revealed that formal leadership development sets the foundation from which to build. However, informal leadership development, as experienced by some participants, is usually hands-on and applied and therefore, stays with individuals longer. Oftentimes, informal leadership development involves doing and learning simultaneously, which generally results in meeting departmental or organizational objectives.

Consistent with Drotter's et al. (2011) LDP framework, executives in IT leadership positions should identify high potential individuals, recruit them and develop their skills with an outcome of improving organizational performance, as was demonstrated in the high visibility duties that were assigned to participants in this study. This study revealed that out of all of the various types of leadership development, high visibility assignments were perceived as the most essential method of effective leadership development that can lead to promotions. This supports William J. Rothwell's assertion (informal lecture at UNLV, August 30, 2013) that 90% of successful individuals in organizations are those who have choice assignments and visibility in the company.

Theme 2: Mentoring, Sponsorship and Networking

Within the LDP framework, Drotter et al. (2011) stresses the importance of using

resources wisely, acquiring new skills, understanding the priorities required at each level, and the importance of senior level executives mentoring and/or sponsoring individuals in lower level positions within the organization. Mentoring and/or sponsorship are important because even if an individual moves up in the organization, without the proper skills, could result in inertia, incompetence, and failure. The majority of the participants had a mentor, coach, sponsor, and/or networked with other executives in IT. This study revealed the participants used a combination of methods to enhance their leadership development, such as mentoring, one-on-one coaching from their supervisor, networking with others, joined professional development organizations, joined formal and/or informal mentorship programs, some of which were company sponsored. Some participants had executive coaches sponsored by their company. Some participants also emulated other executives they perceived as effective leaders. This theme supports changes in job requirements, changes in skill set, and changes in work values that are identified within the LDP framework.

This study also showed that some participants had men sponsors, or mentors, others had women sponsors or mentors. However, in this study, there were more men sponsoring women than women sponsoring women, and more women mentoring women than men mentoring women. These findings support the literature regarding the importance of mentors, sponsors and support networks and role models for women in IT fields (Katz et al., 2004). It also supports scholars who believe women need a broad circle of support for their careers (Cheung & Halpern, 2011; Gordon et al., 2007). Although some participants were mentoring and/or sponsoring other women, some were not. At the time of this study, some participants expressed they were not mentoring others in a formal capacity due to time constraints, previous bad experiences or frustration with women who appeared not to be serious about developing their careers. Some of

the participants also expressed that some women in lower level positions in IT fields do not feel comfortable approaching women in IT executive positions. Too few women are seen in IT executive position in organizations, and as a result the few women that exist are oftentimes stretched, stressed and pressed for time, which can prevent them from reaching out to other women. This sends a negative message that women in executive positions are too busy to help them, which supports Hoobler et al. (2011) findings regarding the difficulty in finding women mentors and role model because there are not enough women represented in IT fields. Although the majority of the participants benefited from mentoring and sponsorship, they experienced it differently from men because they had to search for mentors and sponsors. In many cases, mentors and sponsors were not readily available to them.

Theme 3: IT Workplace and Cultural Challenges

The majority of the participants endured cultural challenges, stressful and unprofessional situations as a result of their gender and gendered work environment. This study found participants encountered gender-related issues such as bias, discrimination, self-identity issues, micro-aggressions, and sometimes blatant disrespect and marginalization. Although the participants faced discrimination, and other forms of abuses, there was no evidence they sought resolution to address these issues. According to the literature, this is not unusual, organizations, in many cases, do not deal effectively with gender-related issues facing women in the workplace, although there are federal anti-discrimination laws. Additionally, organizations generally have workplace policies against harassment and abuse. Even so, the policies are perceived as ineffective. Women are reluctant to file formal complaints because oftentimes, by doing so, they face more scrutiny and/or retaliation. Therefore, women are still not sure how to handle gender based issues in the workplace when they occur. A few of the participants confronted cultural and

gender related issues head-on with the aggressor(s). However, most women ignored them and considered gender and cultural issues business as usual in the workplace.

Some women, in order to assimilate into male dominate cultures, take on masculine characteristics. For example, shortening their feminine sounding name to the masculine sounding version that was found in this study, which supports Tapia and Kvasny's (2004) study about women that "masculinize and Anglocize" (p. 88) in gendered organizations. As found in this study, gender and workplace cultural issues cause much frustration for women in IT fields, and supported by the literature regarding the obstacles facing women in IT fields. They are the primary contributors to why many women in IT fields leave their high paying jobs, and sometimes exit the IT field altogether.

The participants in this study faced and overcame obstacles in the workplace due to a gendered work environment. While workplace culture and environment was not explicitly stated in Drotter's et al. (2011) LDP framework, the participants acquired new skills, spent their time differently, and created strategies to navigate and manage transitions, which included workplace cultural challenges. The ability to navigate workplace cultural challenges were recognizable factors that greatly enhanced the participants' leadership effectiveness and success. This theme supports all three constructs within the LDP framework because navigating workplace cultural challenges required changes in time application, changes in skill set, and changes in work values. This theme also supports the literature regarding cultural challenges, stereotypes, gender bias, gender discrimination and other gender-related issues that women in IT fields face in the workplace (Armstrong et al., 2011; Ely et al., 2011; Heilman, 1995, 2001; Kvande & Rasmussen, 1994; Lemons & Parzinger, 2001; Ramsey & McCorduck, 2005; Tapia & Kvasny, 2004). Additionally, this theme revealed that gender bias exists in academic settings,

especially in technology and engineering disciplines, which confirms NCWIT (2015) findings about the challenges of women in STEM disciplines in higher education.

Theme 4: Purposeful and Strategic Thinking

As the participants transitioned into higher levels of leadership in their organizations, their responsibilities increased. They purposefully transitioned from operational day to day thinking to long term strategic planning and critical thinking. Within the LDP framework, one essential requirement is that leaders shift from short term thinking to long term strategic thinking. According to Drotter et al. (2001), in order to make the shift, individuals must utilize all three constructs within the LDP framework—changes in time application, changes in skill set, and changes in work values. This theme is also interlinked with the other themes identified in this study.

As a strategy to develop effective leadership qualities, the participants intentionally broadened their skills—enhancing their competencies, political and business savvy, communication and collaboration, presentation, listening and motivational skills, strategic planning, teambuilding, coaching, delegation and negotiation skills were found to be essential characteristics for being a successful leader. Although the majority of participants developed written strategic plans for their organizations, a majority of them did not develop a written strategic plan for their own personal career leadership development. This study found the majority of women in IT fields utilized some kind of strategy, though not always well thought out, for transitioning to higher level positions—they take a ‘just do it’ approach, meaning they generally just started applying for jobs they found interesting. Sometimes, when no written strategic plan for their own leadership development existed, once they achieved a higher level position, they oftentimes faced a steep learning curve, struggled, and experienced a zig-zag

approach before acquiring the necessary skills. Women in IT should use similar approaches for developing strategic plans for their personal career and leadership development as they do for developing strategic plans for their organizations.

This study also revealed some participants made numerous lateral moves, mostly inside the organization to develop the skills they needed to ascend to an IT executive position. Although successful, this route delayed their ascension to a higher level by five to seven years, which was probably attributed to spending too much time in each lateral position. Lateral move strategies can also impact compensation and financial wealth, such as long term financial retirement investments, since most lateral moves do not generally include a salary increase. Sometimes women who did not make lateral moves, either through a sponsorship or by changing companies, arrived at executive IT posts within a shorter period of time, when compared to some individuals that made incremental steps to higher level executive positions.

Theme 5: Managing Transitions and Self-Renewal

This theme supports the Drotter's et al. (2011) beliefs that within the LDP framework, as individuals ascend into higher levels of leadership they generally transition through several passages of leadership, mastering each of the skills, in order to be successful. At each passage, changes in job requirements are required— changes in time application, changes in skill sets, and changes in work values. As the participants moved from one level of leadership to the next, this study found each new leadership level required new job skills, such as the ability to set a vision and articulate it, to inspire and motivate staff, to effectively collaborate and communicate upwards and downwards in the organization. It required shifting their focus from day to day operations on the 'how' to a strategic perspective focusing on 'what needed to be done.' In some cases, the shift required them to have an external view of what was happening outside the

company, and focus on both internal and external customers, shareholders and stakeholders.

The participants were able to effectively make the shift in job requirements at each of their respective passage levels 3 through 6, as identified in the LDP framework. This study found that women who were responsible for global operations made the most significant changes because they had to deal with different cultures in different countries, in different time zones. They also led teams across multiple continents, which required different skill sets and abilities. This data revealed that although many women struggled with their leadership development and managing transitions in the early stages, they eventually were successful in navigating through the level of leadership to which they ascended.

Theme 6: Work Life Balance and Family Influence.

The majority of the participants expressed challenges with work and personal life balance. This study revealed that participants who were married, had significant others, children and/or were primary caretakers, had more challenges balancing work and family life than participants who did not. Work life balance, and family influence was not explicitly mentioned in the LDP framework. In my opinion, it should be explicitly stated since individuals cannot separate who they are, as a person, spouse, mother and/or primary care giver, when they enter the workplace. The participants in this study wore many hats, which represented a confluence of multiple roles and responsibilities. Work life was just one of those roles. However, the 'work hat' was predominately seen by others in the workplace. The participants in this study had family and personal responsibilities outside of work, which had a direct impact on their decision making, such as whether to take a higher level position, or whether to take a job that required working excessive hours outside of normal work times. The participants responsible for global functions and running an entire company intentionally merged certain aspects of work with their

personal lives. The skills the participants acquired, the changes in how they spent their time, and the changes in work priorities are addressed in the LDP framework. Therefore, since work life balance was a strategy the participants used, it is implied, and is interlinked with Themes 3, 4, and 5.

Several participants' office work was integrated into their personal life, sometimes interrupting family time. The participants who were responsible for global operations, planned for work to occur after hours. Other participants were explicit about not integrating work with their family and personal life. This is consistent with Hewlett and Luce's (2005) study about working women juggling multiple hats, and struggling with balancing work, personal, and family life. This study also revealed that family values instilled at an early age were reflected in decision-making such as, thinking about whether or not a bad decision would bring dishonor to the family. Additionally, family had a strong influence, and were often included in the conversations around decisions to take higher level positions, especially if the position required relocating to another area.

Theme 7: Strength and Resilience

Within Drotter's et al. (2011) LDP framework, as leaders transition into higher positions with increasing levels of responsibilities, at some point they may face tough times such as dwindling resources, economic downturns, crisis and emergency situations, possible security breaches, and legal issues. As a result of purposeful and strategic thinking, individuals in leadership should have contingency strategies in place for handling unexpected situations when they occur. In the midst of these situations, it is important for leaders to lead by example, reassure employees, review and execute appropriate strategies, and continue to add value to the overall business goals. This theme was interlinked with all seven themes, and supports all three

constructs within the LDP framework—changes in time application, changes in skill set, and changes in work values.

In most cases, the participants understood what they were lacking in leadership capabilities, and set out to acquire the necessary skills and competencies. Although many of the participants started with no formal leadership training, they quickly assessed their needs, and utilized every resource available to them to bolster their effectiveness as a leader. They sought out mentors, coaches and sponsors, networked with other executives in IT, joined professional development organizations, and did self-study. While they were acquiring and growing into their positions, and managing multiple transitions, they were also faced with adversity due to their gender and/or race. For many, the only way to deal with it was to be aware of what was happening, and strategize on how they would handle a situation, when and if it occurred. Some decided to ignore gender workplace issues altogether, others confronted it as it occurred. All in all, the participants were thick-skinned about these issues, not allowing themselves to become side-tracked over gender related workplace issues, and at the same time providing advice, mentoring and being sounding boards for other women, as well as helping them with their workplace challenges.

Overall, the participants were determined, purposefully and strategically focused on being successful leaders. Many of the participants were challenged with work-life balance issues—having to deal with interruptions during family time. Some of the participants responsible for global operations strategically and purposefully integrated their office work during personal and family time. However in spite of these challenges, they all seemed to be able to manage their personal and family life successfully.

The majority of the participants had an experience that shaped their leadership in some capacity. Some experiences were positive and others catastrophic. The study found participants

sometimes made mistakes which lead them to question their own leadership abilities, as well as questioned by others. However, they were strong, determined and resilient —utilizing their mistakes as learning opportunities to improve their level of performance and for some, move into executive leadership positions.

Conclusion

Women in IT fields continue to face challenges in leadership as they transition through the various levels of leadership, they make the necessary changes required to master the skills required at that. Many of the women in this study, at first, were not appropriately prepared for leadership but quickly assessed what areas they needed to improve. They strategically and purposefully used whatever resources were available to them, and made the necessary steps to expand their knowledge and leadership competencies. They sought out, mentors, sponsors, formal training, did self-study, joined professional development organizations, networked with other executives in IT, and emulated others. Additionally, some women made lateral moves to acquire the skills and experience needed to ascend to higher levels in the organization.

Some of the women in this study had a mentor, sponsor or professional coach and believe mentoring and sponsorship to be important. Although the majority of them mentored others in the past, not all of them were mentoring at time of this study, although on occasion they provided advice and were available as a sounding board to others. Several of the participants stated that their schedule did not permit them to be formally be involved in mentoring programs. Other women cited that they were mentoring two women but both of them decided to leave the IT field. Another participant is rethinking mentoring because of previous bad experiences.

The women in this study were highly educated, had a pioneering spirits and were risk takers. They went where few women go— seeking out jobs that are traditionally held by men, and creating pathways for other women in IT fields. Contrary to what the literature says regarding women in IT fields being reluctant to take risks, the women in this study were not afraid of new challenges. Even though sometimes they did not have previous training, knowledge or the background needed to do the job—they took on high visibility assignments and projects, fixing major and critical organizational problems, and implementing new groundbreaking business strategies. Because of their tenacity, determination, ‘can do’ attitude, and effectiveness at managing the resources needed for the job, they prevailed. In some cases they ascended to higher levels, including executive ranks within the organization.

The literature covered strategic planning women in IT fields do for their departments and organizations. Outside of setting job performance goals, it did not address the need for women to develop a strategic plan for their own personal leadership development. Women in IT fields need to spend time developing a written personal career leadership development strategy. This plan would serve as a directional map, which could minimize “trial and error”, “just do it”, and “learn as you go” approaches, which I call the “trial by fire” approaches to leadership. These informal approaches to leadership development, though sometimes successful, can delay ascent to higher levels executive level. If formal leadership development is not available or offered through an employer, women should invest in their own career leadership aspirations, and not wait for the organization to provide it.

Formal leadership development is important because it establishes the foundation that is required for leadership. It also adds to the leadership competencies and portfolio, is generally quantifiable, and helps with credentialing, which is marketable. Informal leadership development is also important, and is especially beneficial for mentorship, networking and

building professional networks. Because of the dearth of women in IT leadership roles in most organizations, it is also important for women in IT fields to connect with professional development organizations that bring women and men in IT fields together to discuss issues and strategies important to them and their profession. Some of the topics generally presented and discussed are leadership strategies, trends, technological advancement, personnel, policy and procedure, professional development such as mentoring, sponsorship and coaching, gender-specific issues, and workplace culture

Although women in general are nurturers and utilize soft skills, many women in IT fields spend years developing and cultivating their technical skills, and sometimes are promoted to leadership because of it. However, once they move into a leadership position, they lack some of the essential leadership skills required at that level. For example, vision, strategic planning, delegating, motivational and communication skills, active listening skills, presentation skills, coaching, counseling, and employee disciplinary skills. These skills are common to any leadership position. However, since most women in IT fields tend to focus on hard skills (technical), leadership skills are not usually emphasized in technical positions. Women in IT leadership roles effectively manage many transitions, including obtaining new skills that require them to shift from short term, day to day operational thinking, to long-term strategic and global thinking. These transitions also include the ability to handle expanded and increasing job demands, especially when they are responsible for multi-site and/or global operations. At the

same time, they strategically and purposefully manage their work, life, and family balance, all while they deal with gender issues in the workplace.

Gender related workplace issues are difficult and stressful for women to deal with on a daily basis, especially given that most women are generally the primary care giver for their family. Women in IT leadership positions face pressure at work due to cultural challenges as well as working in a male dominated role and environment. Because of the job stresses and pressures of being in combative environments, women in demanding roles such as IT leadership should take great care to ensure they take the necessary time for themselves at work and in their personal life to manage stress. Although women struggle to be treated and respected as equals in the workplace, they still manage to have extraordinary performance in the midst of workplace adversity, and in fulfilling their personal life obligations.

Although the literature stated a major deterrent for women in IT fields is the perception that IT is very demanding, and is not a good career choice for women who are planning on having families (Heilman & Okimoto, 2008; Hewlett & Luce, 2005). Women are capable of having a rewarding career, managing work, and enjoying family life, as found in this study. Overall, women can manage demanding leadership jobs and master the job change requirements as they transition from one level of leadership to the next as confirmed by this study. The culture and organizational cover-ups, not the women's skills, leads to attrition and problems for women in the IT workplace. Specifically, it is the systemic and institutionalized male dominated culture within organizations, and academic settings that prevail. Organizations continue to sustain a culture that allow marginalization of women, and perpetuate gender related issues such as unequal treatment, gender bias, discrimination, hostile work environment and exclusion in the workplace. Although women have more opportunities in the workplace

than ever before, major obstacles still prevent women from advancing to and remaining in traditionally male-dominated positions.

According to James and Wooten (2004, 2006), while anti-discrimination laws exist, and most organizations have anti-harassment and abuse policies for the workplace, women are reluctant to file formal complaints because oftentimes more scrutiny and retaliation follow. Some of the primary violators are top level officials; those who wield power, usually men who are seen as vital to the organization, and vigorously protected. Generally speaking, when formal complaints of discrimination are made, organizations treat them as organizational threats, and are likely to go into crisis management mode, sometimes stacking the deck against the person who filed the complaint (James and Wooten, 2004, 2006; Kunc & Meyer, 2014).

Organizations need to stop the practice of blaming the victim, and strategically and purposefully work to resolve the issues, starting with conversations around data. For this study, 43 women, representing multiple fields in technology, expressed interest in talking about their experiences in IT. Women would welcome open and honest discussion about workplace issues, instead of filing complaints. For years, many organizations have conducted workplace climate surveys. Instead of letting the data sit on the shelf, honest conversations around the data with both men and women could be the beginning of improving workplace conditions in gendered organizations.

Unfortunately, there is no easy or quick solution to the broader problems women face on a daily basis. Discrimination and the mistreatment of women in the workplace are woven into the fabric of the American culture and norms (Abrams, 1989; Banks, Eberhardt, & Ross, 2006). It is a national problem, not just a problem on an organizational level. From a national perspective, women and men advocating for women to hold more top economic, political and

judicial positions could be a turning point, and the spark needed to see positive changes for women, not just in IT fields, but for all women in the workplace. It may take a woman holding the highest public office in America that advocates for women rights in the workplace before real change happens. Until workplace gender and cultural problems improve, and the lack of leadership development opportunities are eliminated, women will continue to struggle in the workplace to achieve IT executive leadership positions, and will continue to lag drastically behind men in IT executives roles.

Recommendations for Future Research

This study focused on the lived experiences of women in IT fields as they transitioned from one level of leadership to next, specifically, the changes in job requirements—changes in skill set, changes in time application, and changes in work values and priorities. Using a phenomenological approach, and Drotter's et al. (2011) LDP framework, this research study showed the participants' leadership experiences. Although, the participants' stories provided extensive knowledge about women in IT leadership, more studies on women in IT fields should be conducted, especially given the relatively large number of women who responded to the call to participate in this study. Clearly, women want to tell their stories. Some recommendations for future research are:

- A qualitative study that expands the focus to encompass the six levels of the LDP Conceptual Framework.
- A qualitative study to explore skill sets, time application , and work values between all levels of the LDP Conceptual Framework., with both women and men, or either women and men.
- A qualitative study focusing on the lived experiences of women of color in IT fields, particularly African American, Latina and Asian.

- A phenomenological study of the lived experiences of men in IT fields as they move from one leadership level to the next.
- A quantitative survey research study exploring the differences between men and women and leadership transitions.

Summary and Implications

The study is important because it provides an understanding of how women in IT fields can be successful leaders in spite of facing societal, workplace and cultural challenges. The study highlights the importance of formal leadership preparation and continuous leadership development for women in IT fields, and how it is a building block to further career progression for women. The study stresses the importance for women in IT fields to develop their own personal leadership development career strategy to serve as a roadmap. The study also underscores the importance of mentoring, sponsorship and networking, as well as mentoring others. As highlighted in the study, women in IT fields take a strategic and purposeful approach to managing work, life and family balance.

Additionally, this study could help organizations gain a better understanding of the challenges and barriers faced by women in IT fields, and what needs to be done to facilitate leadership development for women in IT fields, and the promotion of women to higher levels of IT leadership. Insights for organizations to use to attract, develop and retain women in IT are provided in this study, which if obstacles are removed, could encourage women to pursue IT disciplines at universities. The study provides insight for organizations to improve working conditions in the workplace for women, and develop strategies for increasing the representation of women in IT fields, which will also significantly narrow the IT labor shortage in the U. S.

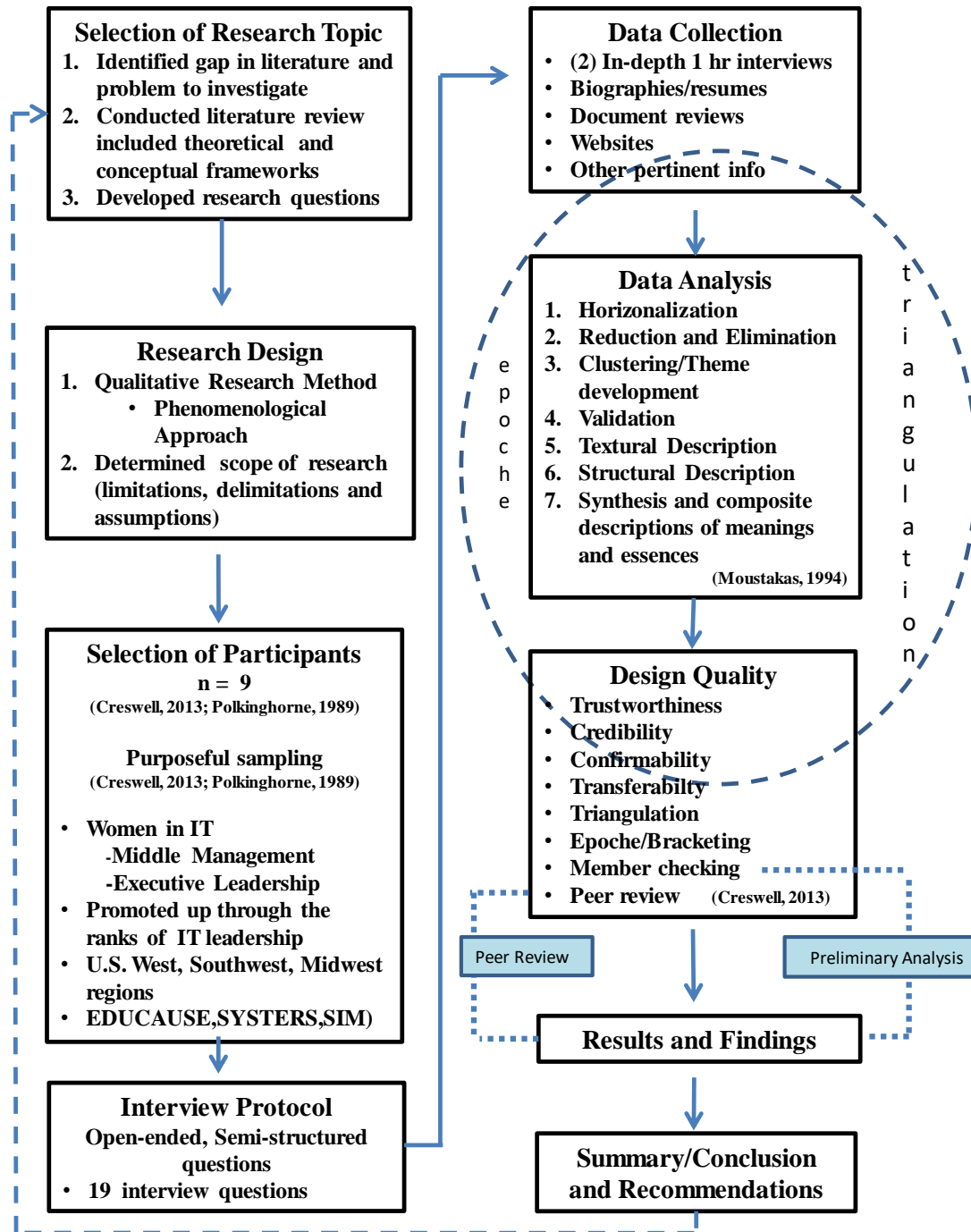
Since there is an IT workforce shortage in the U. S., if nothing is done, it will inevitably have an adverse impact on America's ability to compete in global markets. The addition of more women in IT fields would narrow the IT workforce gap, bring more innovation the technology industry, and be more representative of the users of technology. Because of the need for the U. S. to compete in global spaces, knowing this information about women in IT fields, policy makers could develop policy and programs to attract, develop and retain women in IT fields. Organizations can use this information to help change the IT workplace culture—making it a positive experience and place to work for women. This research adds to the existing body of knowledge on women in IT fields, and IT leadership and can be used by researchers to conduct future and more in-depth research on women in IT fields.

The overall outcomes of this study are women use every day skills learned from leadership development, and the multiple hats they wear, to navigate and manage transitions in their leadership, careers, workplace, and personal and family life. Women are adept at obtaining, and applying the necessary job skills and competencies at every level of leadership just as men do. However, like men, they generally are not handed guidance on corporate gamesmanship—the “game, the board, and the rules” (Harragan, 1977, p. 19). Also, men get reinforcement from other males, and from the masculine organizational structure (Kvande & Rasmussen, 1994). In spite of challenges, women in IT fields exhibit a focused effort using strategy to challenge the status quo, which also helps them to be successful. Women in IT fields are tough and resilient, they can have it all! They can be successful in IT executive leadership, and balance work and family life. Women can overcome obstacles, and successfully transition to the highest level of IT executive leadership positions, and if desired, go beyond to obtain President and/or CEO posts.

Additionally, women in IT fields should start preparing formally and informally for leadership positions prior to getting into leadership positions, when possible. Women in IT fields, who are leaders or aspire to be leaders, should develop a written personal career leadership development plan, evaluating it often, using it as a directional compass for leadership. This study add to the existing body of knowledge, and is relevant to practitioners, researchers, organizations and policy makers to promote equality in the workplace, and advance the effective leadership development and promotion of women in IT fields.

APPENDIX A

Research flowchart for this study



APPENDIX B

RESEARCH RECRUITMENT EMAIL

Dear Women in Information Technology:

My name is Marilyn Delmont and I am a Ph.D. student in the Workforce Development & Organizational Leadership program at the University of Nevada, Las Vegas. I would like to invite you to participate in my dissertation research study entitled, *The Lived Experiences Of Women Leaders In The Information Technology Field As They Transition From One Leadership Level To The Next: A Phenomenological Study*.

The purpose of this study is to explore women's lived experiences in their development as leaders in Information Technology (IT) fields. This study examines the lived experiences of women in IT leadership roles to understand how they develop their leadership abilities as they transition up the career ladder.

To participate in the study you must meet the following criteria:

- 1) Be currently working in an IT middle management level position or an IT executive leadership level position (defined below);**
- 2) Be working in your current position for at least one year;**
- 3) Provide a current copy of your resume and biography (if available);**
- 4) Be available for two 1-hour interview sessions that can be conducted using your preference of face to face, phone, email and/or SKYPE/FaceTime methods.**

If you have a story to share and want to contribute to the understanding of women's leadership experiences in IT fields, your participation is needed. If interested, please contact me at (480) 229-3591 or via email listed below by DATE. You can request a copy of the study once it is completed.

Please direct your questions to delmontm@unlv.nevada.edu, or my dissertation committee chair, Dr. Cecilia Maldonado at ceciliam@unlv.nevada.edu. Thank you in advance for your interest and participation in this study.

Sincerely,

Marilyn Delmont
(480) 229-3591

Dr. Cecilia Maldonado
(702) 895-3410

DEFINITIONS:

An individual in an **IT middle management level position** works in a computer technology department and holds a senior level management or director position and reports to the head of the computer technology department. *Sample job titles include Assistant/Associate Director, Director or Senior Director.*

*A person in an **IT executive leadership level position** works in a computer technology department and holds the highest level leadership position in this department or is the President/CEO of a technology company. *Sample job titles include Executive Director, Chief Information Officer (CIO), Chief Technology Officer (CTO), Vice Chancellor/Vice President/Vice Provost, Assistant or Associate Vice Chancellor/Vice President/Vice Provost.*

APPENDIX C
RESEARCH ELIGIBILITY AND REQUEST
EMAIL

Dear Prospective Participant:

Thank you for your interest and for agreeing to participate in my research study entitled, *The Lived Experiences Of Women Leaders In The Information Technology Field As They Transition From One Leadership Level To The Next: A Phenomenological Study*.

The purpose of this study is to explore women's lived experiences in their development as leaders in Information Technology (IT) fields. This study examines the lived experiences of women in IT leadership roles to understand how they develop their leadership abilities as they transition up the career ladder.

All interviews will be conducted during the months of February and March. The interview can be done via email and the responses sent back to me on or before February 29, 2016. Phone and Skype interviews are also available and will consist of two 1 hour sessions. Face to face interviews can be done depending upon your proximity to Las Vegas, Nevada. Additionally, a combination of interview methods can be used, for example, one interview session can be done face to face, via Skype or over the phone, and the other interview session could be done via email. Phone, Skype and face to face interviews can also be done evenings and on weekends if that is more convenient for you.

Please reply to this email with your preferred interview method(s). If you are choosing, phone, Skype or face to face, please list *3 different dates/times (include time zone)* that are convenient for you to do each 1-hour interview. I will confirm your interview method and/or interview appointments with you by email.

Additionally, I have attached an Informed Consent form for your review. Please sign, scan and return to me. If you are choosing email as your interview method, the interview questions will be sent to you immediately once I receive your signed Informed Consent form. For those of you choosing interview methods other than email, *although not required*, I would like your permission to audio record the interview. On the form, in addition to signing the Participant Consent section. To allow me to audio tape the interview, please sign the Audio/Video section as well. Please contact me at 480-229-3591 or via email if you have questions.

Please forward all of the requested information to me at delmontm@unlv.nevada.edu by **Tuesday, Feb 9, 2016**. Thank you again for your consideration and willingness to participate.

Appreciatively,

Marilyn Delmont

(480) 229-3591

Attachment: Informed Consent form

APPENDIX D

INTERVIEW QUESTIONS

First Interview: (1 hour)

Leadership Development

1. Tell me about how you formally prepared for your first leadership position?
 - a. Informally prepared?
2. Tell me about how you formally prepared for your current leadership position?
 - a. Informally prepared?
3. Which method of preparation, formally or informally, do you consider the most effective for your leadership development and why?
4. Tell me about an experience or significant circumstance(s) that shaped your leadership development?
5. What characteristics and skills do you think attribute to your success as a leader?
6. Tell me about the characteristics of the person(s) that supported your leadership aspirations and development?
7. Do you sponsor or mentor any women who aspire to become leaders in the IT field? If not, why? If so, describe what that is like for you?
8. What aspects of the job do you consider the most important for women and why?
9. What are your future career plans?
- 10. Would you like to add anything else about leadership development?**

Second Interview: (1 hour)

Job Transition: Changes in Job Requirements

11. Tell me about a time when your leadership role required you to make changes in how you spent your time?
12. Tell me about a time when your leadership role required you to acquire new job

- skills? What were they and how did you develop the new job skills?
13. Tell me about a leadership role where your primary areas of focus for the job changed. Which position(s) and what were the changes and why?
14. Why do you think women are not making the transition to executive IT leadership roles at the same rate as men?
15. What strategies do you think could help women transition from a middle-management level position to an IT executive level position?
- 16. Would you like to add anything else about job transition and changes in job requirements?**

IT Culture

17. Have you experienced any cultural challenges/barriers working in a male dominated field? If so, please describe them and the strategies you used to overcome them? If not, please explain.
- 18. Would you like to add anything else about IT Culture?**

Lessons Learned

19. What aspects of your leadership experience were the most satisfying and why? the least satisfying and why?
20. What lessons have you learned from your experience as a woman in the IT field? In a leadership role?
21. What advice would you give to women on how they should prepare for an IT leadership position?
22. Would you do things the same way, if yes, why? If not, what would you change?
- 23. Is there anything else that you would like to add?**

APPENDIX E



INFORMED CONSENT

School of Environmental and Public Affairs

TITLE OF STUDY: The Lived Experiences Of Women Leaders In The Information Technology Field As They Transition From One Leadership Level To The Next: A Phenomenological Study

INVESTIGATOR(S): Dr. Cecilia Maldonado and Marilyn Delmont

For questions or concerns about the study, you may contact Cecilia Maldonado at (702) 895-3410 or Marilyn Delmont at (480) 229-3591.

For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted, contact **the UNLV Office of Research Integrity – Human Subjects at 702-895-2794, toll free at 877-895-2794 or via email at IRB@unlv.edu.**

1.1.1 Purpose of the Study

You are invited to participate in a research study. The purpose of this qualitative phenomenological study is to explore women's lived experiences in their development as leaders in information technology (IT) fields. Little is known about the nature of the informal and formal quality of leadership development experienced by women in IT as they move from one level of leadership to the next. This study will examine the lived experiences of women in IT leadership roles to understand how they develop their leadership abilities.

1.1.2 Participants

You are being asked to participate in the study because you fit this criteria: You are a woman in a middle management or an executive leadership level position in the IT field, that have one or more years of experience in your IT leadership role.

1.1.3 Procedures

If you volunteer to participate in this study, you will be asked to do the following: Agree to two one-hour in-depth interviews that will be conducted in order to understand the transition in job requirements, specifically change in time application, change in skill set and change in work values as you transition from one level of leadership to the next. You will have the choice to conduct these interviews face-to face, by phone, email or mediated through the computer (i.e., SKYPE).

Benefits of Participation

There may not be direct benefits to you as a participant in this study. However, we hope to gain from your experiences a better understanding of women's leadership experiences in the IT field and outcomes which may help organizations develop policies, programs and strategies which ensure the promotion, retention and success of women in the IT field.

1.1.4 Risks of Participation

There are risks involved in all research studies. This study may include only minimal risks. There may be some discomfort for you, as you will be asked to provide specific experiences relating to your work environment/s (i.e. you may become uncomfortable when answering some questions) that you may be reluctant to share.

Cost /Compensation

There will be no financial cost to you to participate in this study. The study will take approximately 2 hours of your time over several days for which you will not be compensated.

Confidentiality

All information gathered in this study will be kept as confidential as possible. No reference will be made in written or oral materials that could link you to this study. All records will be stored in a locked facility at UNLV for 5 years after completion of the study. Paper documents will be shredded at the conclusion of the data storage period using university approved shredding services. Digital data will be stored on an external flash drive, and destroyed at the conclusion of the data storage period.

Voluntary Participation

Your participation in this study is voluntary. You may refuse to participate in this study or in any part of this study. You may withdraw at any time without prejudice to your relations with UNLV. You are encouraged to ask questions about this study at the beginning or any time during the research study.

Participant Consent:

I have read the above information and agree to participate in this study. I have been able to ask questions about the research study. I am at least 18 years of age. A copy of this form has been given to me.

Signature of Participant Date

Participant Name (Please Print)

Audio/Video Taping:

I agree to be audio taped for the purpose of this research study

Signature of Participant Date

Participant Name (Please Print)

APPENDIX F

CLUSTERS OF MEANING

Table 12

Clusters of Meaning and Theme Development

Units of Meaning	Theme
Type of informal leadership development- <i>first job</i>	Formal and Informal Leadership Preparation
– Self-Study	
– Modeling Others	
– Trial and Error	
Type of formal leadership development- <i>first job</i>	
– MBA or University Program	
– Organization-leadership program	
– Professional Membership Organization	
– Job Shadowing/On the Job Training	
Type of formal leadership development <i>current job</i>	
– MBA or University Program	
– Organization-leadership program	
– Professional Membership Organization	
– Job Shadowing/On the Job training	
Type of informal leadership development <i>current job</i>	

Table 12

Clusters of Meaning and Theme Development

(Continued)

Unit of Meaning	Theme
Mentor	Mentoring, Sponsorship and Networking
Role Model	
Sponsor	
Peer Coach	
Professional Coach	
Male advocate/advice from men	
Networking	

Table 12

*Clusters of Meaning and Theme Development**(Continued)*

Units of Meaning	Theme
Underrepresentation of women	IT Workplace and Cultural Challenges
Gender issues	
Workplace challenges and barriers	
Negative attitudes and behaviors	
Strategy for handling cultural issues	
Men always compete	
Men talk out of turn; they will talk over you	
Women sometimes reluctant to speak up	
Men don't respect women in IT fields	
Women have to push to get visibility among executives	
Lack of sponsors/mentors/role models	
Men will lie about their accomplishments	
Boys behaving badly	
It has gotten worse	
They relegate women to meaningless jobs	
Put women in a bucket	
They label assertive women negatively	
Right away all of the negative things come out	

Table 12

Clusters of Meaning and Theme Development

(Continued)

Units of Meaning	Theme
Move to an IT Executive position	Purposeful and Strategic Planning
Retire	
Consulting	
Nonprofit volunteer	
Governing board work	
Write to an IT Executive ire	
Consulting	
Nonprofit volunteer	
Governing board work	
Write articles and books	
Develop personal career leadership	
development strategy	

Table 12

Clusters of Meaning and Theme Development

(Continued)

Unit of Meaning	Theme
Be thick skinned	Purposeful and Strategic Planning
Stay current and relevant	
Advocate for yourself	
Seek out male advocates	
Develop a personal career plan	
Involve your significant others/family in your career planning	
Joint professional network organization	
Find your own support group	
Mentor/sponsor others	
Learn how to negotiate on your own behalf Ask for what you want	
Continuous improve your leadership skills and your technical skills	

Table 12

*Clusters of Meaning and Theme Development**(Continued)*

Units of Meaning	Theme
Acquire appropriate job skills	Managing Transitions and Self-Renewal
Expected to know what to do in your new role	
Change way of thinking –moved from short term to long-term strategic thinking	
Delegate tasks, broader range of responsibility	
Analytical and critical thinker	
Manage large staff and budgets	
Works with other to solve company problems- not just functional area's problems	
Create vision, set direction and drive operating strategies	
Develops sustainability and add value to their function	
Focus is on bottom line	
Examine activities/operations from a short-term and long-term perspective	
Capable of adopting a broad and long-term	

Table 12

*Clusters of Meaning and Theme Development**(Continued)*

Unit of Meaning	Theme
Strategy to visionary thinking from operating to global perspective	Managing Transitions and Self-Renewal (Continued)
Focus on the whole and not the pieces	
Communicate clearly	
Promote and role model team work	
Engage and recognize employees	
Develop change strategy	
Invest in staff	
Motivate/inspire staff	
Evaluate strategy	
Allocate and deploy capital	
Determine core capabilities for success Aligns with long term strategy	
Ability to proactively manage external constituencies	
Get satisfaction from success of working with other departments and/or managers success	
Appreciates managing portfolio of businesses/departments	
Decision-making	
Value trade offs	
President managing enterprise	

Table 12

Clusters of Meaning and Theme Development

(Continued)

Unit of Meaning	Theme
Children	Work Life Balance and Family Influence
Spouse	
Parents	
Grandparents	
Siblings	
Stress	
Working afterhours	
Dinner time interruptions	
Time zone differences	
Relocation	
Retirement benefits package	

Table 12

Clusters of Meaning and Theme Development

Continued)

Unit of Meaning	Theme
9/11	Strength and Resilience
Court Martial	
Loss of Job	
Not preparing leadership team	
Passed over for a promotion	
Side bar conversation about communicating with people	
Neglected to let others know of interest in a higher level job	
Had experience or person that shaped leadership	

APPENIDX G

INVARIANT CONSTITUENTS

Table 13.

Final Invariant Constituents and Themes Application

Education	Source	%
Bachelor's Degree	9	100%
MBA/Master's Degree	8	33%
Ph.D./J.D.	1	100%

Time in Current Job	Source	%
One to ten years	7	78%
Over 26 years	1	11%

Total IT Experience	Source	%
1 to 10 years	0	0%
11 to 20 years	3	33%
21 to 29 years	3	33%
Over 30 years	3	33%

Table 13. (Continued)

Final Invariant Constituents and Themes Application

Leadership Development	Source	%
Informal leadership development	9	100%
Formal leadership development	8	89%
Most Effective leadership preparation method		
Both informal and formal leadership development	5	56%
High visibility leadership development assignment	4	44%
formal leadership development	2	22%
informal leadership development	2	22%

Future Plans	Source	%
Did not develop a personal leadership development plan	6	66%
Plan to seek higher IT executive level position	5	56%
Do not plan to seek higher IT executive position	4	44%
Developed personal leadership development plan	3	33%

Making a Paradigm Shift	Source	%
Shift in how time was managed	9	100%
Shift in skills-acquired broader skill set	9	100%
Shift from short-term to strategic thinking	8	89%

Table 13. (Continued)

Final Invariant Constituents and Themes Application

Boys Behaving Badly	Source	%
Gender- related bias issues	9	100%
Underrepresentation of women in IT fields	9	100%
Harder for women to get promoted to executive leadership	9	100%
Negative attitudes and behaviors towards women	8	89%
Tough and unwelcoming	7	78%

Work, Life and Family	Source	%
Work life balance	5	56%
Family Influence	3	22%

Mentoring, Sponsorship, Coaching and Networking	Source	%
Does not mentor others	6	66%
Mentors others	4	44%
Had a coach or network	3	33%
Had a mentor	2	22%
No mentor, sponsor or coach	2	22%
Had a sponsor	2	22%

Table 13. (Continued)

Final Invariant Constituents and Themes Application

Advice to Women in IT Fields	Source	%
Good communication, collaboration, presentation, listening and motivational skills, strategic planning, teambuilding, coaching, delegation and negotiation skills	9	100%
Competent, technical expertise, politically and business savvy, self-awareness, self-advocacy-let people know what you want	9	100%
Develop your professional networks-join a professional organization	9	100%
Manage your work life balance	5	56%
Don't be afraid to make lateral moves	3	33%
Develop a personal leadership strategy for your career and evaluate it	3	33%

Leadership Level	Source	%
Executive Leadership	7	78%
Middle Management	2	22%

Table 13. (Continued)

Final Invariant Constituents and Themes Application

Set-Backs, Eye Opening Experiences, and/or Catastrophic Situations	Source	%
Lost out on promotional opportunity	2	22%
Consequences of not developing management team (lost job)	1	11%
Avoided court martial	1	11%
Hostile takeover	1	11%
9/11	1	11%

APPENDIX H

Individual Textural Descriptions

P1 Individual Textural Description

P1 entered into the leadership pipeline as a supervisor. She had several management jobs prior to her IT executive leadership job. P1 attended formal and informal forms of leadership preparation. Transitioning from one level of leadership into an executive job required a significant change in job requirements. Although she does not recall having a mentor, she participated in professional networking organizations and have mentored others. As a woman working in a male dominated IT leadership role, she believes that although it may be a cultural challenge for women in the workplace to talk about their accomplishments—they need to do it. Although P1 has experienced promotional set-backs in her career, she used those opportunities to re-evaluate her career goals and develop a strategic plan for her personal leadership development.

P1 has relocated many times to take executive level positions all with increasing levels of responsibilities. In consultation with her spouse, they have decided that her current position will be her last position. Theme 1 (formal and informal preparation for leadership) was validated when P1 said,

I took on my first leadership role which was... a supervisory position. I didn't think that I had any real formal development or preparation for my first leadership position ... I was in the midst of obtaining my master's degree and I think that that was probably closest to the most formal preparation that I had gotten was through various kind of management classes.

As P1 transitioned into higher levels of leadership she attended formal leadership development training and said,

I've worked with higher Ed in IT for a long time and I will say that I consider myself fortunate in that particular field there is a lot of focus on preparing or at least my experience has been there has been a lot of focus on preparing, you know, the next generation of IT leaders. So through my various roles, my various positions, I was fortunate to participate in a number of leadership development courses, for want of a better word, or programs.

P1 believe that formal leadership development is more effective than informal leadership because of the long term relationships that she has built over the years, she offered,

Kind of a formal program that makes me think about Oh, I need to do better with this or I need to do better with that. I think that can be pretty long reaching by continuing to work with the cohort of people that you meet through those leadership programs, Just today you know I did a leadership program probably 8 or 10 years ago and once every couple of months I had a phone call with a person who was in my cohort and it just encourages both of us. I guess it's a peer, how would you describe that?

Peer....um, like coaching?

Theme 2 (mentoring, sponsorship and networking) was validated when P1 commented that,

I wouldn't say in my career I've ever had a person that I would consider a mentor so I did not have a mentor that uh, you know helped me a long but being observing to leaders that I thought were admirable. Also, one thing that has worked for me ... um, I've been very active in networking organizations, particularly networking organizations that focus on women in technology. ...you get exposed to many different types of leaders and many different perspectives and I think that that's the benefit for me is that I was able to pick up a lot of different perspectives [inaudible]. I think that

helped be prepare.

P1 explained her experience mentoring others by saying,

You know I don't think I had a good experience when I tried to mentor women so I don't know...I've been in a couple of formal mentoring programs and I'm taking it on in different situations.

P1 applied for a higher level position and shared that because of a disappointment in not getting a promotion to a higher level position that she thought she deserved, led to re-evaluation of her career and the development of her own personal leadership development strategy. She explains it in this way,

...a higher level position became available and I applied for that position and I was unsuccessful and that was a real turning point for me in my career. Not that I never have been turned down for a role before you know I was really disappointed. You know I felt that I had done a great job and I sort of deserved that role and having said that I want to be clear. I didn't go in to the interview with, "well this is mine. They got to give it to me. I didn't go with I got it in the bag but I really felt that I deserved the role. Now what was interesting is that the person that I worked for gave me some great advice, uh, you know he and I talked about it and you know I was pretty upset, I was pretty angry he was asking why I was interested and I told him I was ready, the way I saw it I was ready for my next career step and I wanted that to be at Company A, and you know he asked why and it was actually quite difficult for me to answer that question and he said, "you know, when you're thinking about your career think about the things you want, write it down. You know think about it in a very specific and subjective way. For example, is it more important for you to remain physically in a

particular location than it is for you to take a particular job? Think about what matters and that was really good advice for me. So after I was unsuccessful umm, in obtaining that role I did just that.

P1 shared she had to develop new job skills and leadership strategies for how she managed her time and what areas of the job needed the most focus, which validated Theme 5 (managing transitions and self-renewal). She said,

I do think that every time you move into a different leadership level you do look at how you spend your time ... as I moved from a director to a AVP or a VP it became much more about the leadership piece, much more about thinking about the long term and the bigger questions; what are we going to do, not how are we going to do it.

I happen to be strong technically. You know for me as a leader there's a lot you could say about vision and you know being able to do good strategic planning...I think a big key to my success is you know, I just don't screw things up... I don't miss deadlines and you know I make [few] mistakes, don't get me wrong but I generally don't.

I think the coaching pieces are critical pieces as you get higher and higher in organization. The coaches and the relationship building piece and so I feel that as you move more and more up in the organization it becomes more and more about the people skills and that is a challenge to gain those skills.

After several successful relocations to take higher level executive positions, P1 made an agreement with her family that her current position will be her last one. Balancing work life and family is a concern for P1, she confirmed Theme 6 (work life balance and family influence) by saying,

I got [the opportunity] to move to three different [leadership] roles and take on increasing responsibility ... had to relocate my family and you know um, change my retirement plan...you know I moved 3 or 4 times I think. I'm trying to count but based on my career I've moved my family, I think this was probably my third or my fourth move and before we made this move I talked to my spouse and he agreed we would do one more move and that was kind of it. You know so from my perspective this is my final job.

The advice that P1 would give to other women regarding leadership lessons confirmed Theme 4 (purposeful and strategic thinking). P1 offered the following:

You know women have been told to be humble, to...and that culturally there's another aspect culturally too there can be an overlay of that, especially if you think about the Asian culture, even in the Latino culture, you're not supposed to talk about your accomplishments. You're not supposed to brag and so that you know...that's another added challenge when you add your cultural background on top of it so it's...but it's something women need to do.

I think for me one of the things that worked well is that I moved, I did many lateral moves in the organization so I had every kind of hole in my resume filled before I moved up across the organization. I would give this advice to anyone but it may be especially true for women, being willing to take a lateral move where you can learn some new skills. It is a really positive move in your career. ...I do think that developing um, mentors and sponsors in your organization and outside your organization is important and... um,spending some time honing your political skills because as you move higher and higher in the organization and you can become more exposed to the whole organization it is a political position to be a CIO or to be a vice president so

I would tell women just intentionally work on your communication and your political skills while keeping your technical skills up to date.

I would encourage women when they're looking to make changes in their career to be very thoughtful about negotiating and advocating for themselves at that time so that they put themselves in a better position to move into the higher [executive] ranks. If I have one piece of advice to give the younger me, I wish I had given myself the advice of negotiating on my own behalf.

P2 Individual Textural Description

P2 had many managerial jobs become entering into leadership at the executive level, she said,

I had many managerial positions before actually I had a leadership position

However, when she first started years ago she had no formal leadership training. She validated Theme 1 (formal and informal leadership preparation when she said,

[Initially] There wasn't a formal preparation for me. Um it was more, I was following My inner...inner voice, inner guidance, inner voice...whatever drives you internally. ...now [at current job] I had been to leadership development-type training...one of the things my boss did he sent me to all kinds of training which um was you know really rare.

P2 has a 'can do' attitude, she was given a high visibility assignment to lead and resolve a complex and critical technology security problem within her organization for which, she had no previous background. She credits her success because of an opportunity to apply her leadership skills to resolve a major crisis. P2 has gained a reputation for being an expert in her field and is well sought after by hiring agents. She explains,

So I got called in to the office by the VP and he's like hey, guess what? I need you. You're gonna go fix security and I'm like...I'm like what? And he's like yeah, you're gonna go fix security and I was kind of like okay and I didn't really know what that meant but something inside of me...this is one of the times I did listen to myself. Something inside me said do it. Just do it. This is a good and it's actually...I can't imagine having not said yes because I look back and everything since then has been nothing but positive and it was because I was...had enough ability to say...wasn't afraid to say yes to something that I had no idea what it meant and I think...I look at it now and I'm like oh God, security is like one of the hottest fields. I'm getting calls by recruiters and they're looking for talent in that. It's like a tremendous blessing in my mind that I was given that opportunity and I think it was you know a pivotal point for me to say yes to that. Again, at the time I had no idea what the impact was.

Theme 2 (mentoring, sponsorship and networking) was confirmed when P2 talked about her boss, she sees him as a sponsor saying,

[In my current leadership role] I think he's more of a sponsor and I think having a sponsor and someone who's basically gonna go to bat for you is...is critical and not something a lot of women have which...which they may have mentors but I mean honestly mentors are good but they're not useful in terms of necessarily moving up in an organization.

P2 also shared an experience that she had at another company where she has support from her boss and others by saying,

So I was lucky in that way to have him as a manager...as a minority woman, he

was a white guy and it was you know not something that I expected, right? ...I'd had various women of color who kind of approached me and helped me navigate the politics...I definitely had that support.

P2 often wonders if she would have progressed faster if she had not faced cultural and gender challenges in the workplace. Theme 3 (IT workplace and cultural challenges) was confirmed when she said the following about working in a male dominated leadership role.

...I think in some ways it's gotten worse because there is no concept of political correctness people are revolting against it...I call it the boys behaving badly is getting worse....So I mean my first job I remember somebody coming out and actually went out and asked me directly-first job out of college-basically told me the only reason I got the job was because of affirmative action and I was like really? As far as I know colleges do not give you honorary affirmative action degrees so actually whether or not I got into college because of it I didn't get out of college and I didn't get a degree because of it so I've had pretty direct like um you know people confronting me about stuff...not just gender-related but also racial you know, ethnicity-related barriers.

...they relegate you as a woman who doesn't really understand technology and therefore is kind of worth a little less...unless you can show you have some technical expertise and you can hold your own and challenge people they won't respect me and I think with men...I think the penalty to men of not having technical expertise is far less because once you...you know they could have other attributes like they're a strong leader but they don't really understand what they're talking about but that doesn't matter as much.

For women, it's like well women aren't' really that good in technology so you know

we'll just put them in the bucket over there where they can do some project management or they can do some stuff that doesn't really involve having...technical skills. They relegate them [women] to kind of a lower level of authority as well as I think that impacts compensation. I think that impacts movement in the organization. There's a lot of impacts of it. I mean I think what happens is there are less of those positions of power so what happens is people start selecting those that they get along with most or identify with most so if there's a bunch of white males in the room they're not necessarily gonna feel comfortable bringing someone in who's different than them. Um and if they do bring a woman in it's gonna be a Caucasian women by and large. ...there's no pressure for them you know no regulatory or no oversight on the fact that they don't have diversity at their leadership level. You know it's kind of sad but I don't think it's changed a ton. I think it's worse...You could go on any site and look at their leadership team.

In terms of women... it's right away men they start labeling a woman with negative whenever they see a woman take like more of a direct or assertive role. Right away all of these negative things come out. Like you know their pushy, they don't have a personal life you know all kinds of stuff that's like never I hear men labeled that way.

P2 shared that she is not interested in seeking an IT leadership position like a CIO or CEO, however she is interested in serving on governing boards. She confirmed Theme 5 (managing transitions and strategic thinking) when she said,

So I don't have any...like I don't wanna be a CEO of a company. I don't feel that inside a draw. I don't really aspire to become...I think the CIO role is kind of going

away. I don't really aspire to be a CTO. Um so I'm...in terms of my level within a company I think I'm kind of where I want to be.

Um really one of the things and like I don't know what timing on this but I just want to take leadership to that next level and I want to actually get on boards. I want to be on corporate boards.

P3 Individual Textural Description

P3 is a self-starter, self-learner and developed assessment and development programs with no help from others. She began started doing leadership work while she was in a non- managerial role, these assignments helped her to prepare for leadership responsibilities. Her statement validates Theme 1 (formal and informal leadership preparation) when she said,

In my non-leadership role, I would assist customers with their technology issues, tour other sites and make recommendations for improvements, etc. These tasks required that you be a self-starter, self-learner, and build assessment and development programs with no guidance or training. I quickly adopted leadership skills through this process.

She further commented,

I had obtained a four-year degree (Bachelor of Science in Computer Science). I believe this taught me critical thinking and decision making which were key to my first leadership position. Early on, I learned the Steven Covey time management and goal setting techniques which have helped me throughout my career.

I informally prepared by obtaining positions of greater responsibilities until I was promoted into leadership. I was the Chief Technology Officer (CTO) at a fortune 100

company. This exposed me to senior leadership and prepared me for the CIO role.

...completing a master's certificate program in Public Affairs (which helped me understand Government), and completing a...Leadership Program

P3 believe that experience over education is the most effective method of leadership development, which validated Theme 1 regarding most effective leadership development methods. She said,

I believe both [formal and informal leadership development] methods are equally valuable and bring different skills and knowledge. However, if I had to pick one, I would say that experience (informal) over education (formal) is more effective. What you experience stays with you more and impacts your life more than what you learn in a formal environment.

P3 had an unfavorable experienced that revealed that she needed to change her approach to how she developed her leadership team. Theme 7 (strength and resilience) was validated when P3 described the following situation:

My leadership belief has been one where I try to provide my employees what they need to get their job done and I handle the executive tier, shielding them from that level.

When I left one organization, it became clear that this was not the correct approach.

The team I left behind was ill prepared to deal directly with the executives. This resulted in my 'right hand' person losing his job. I have since ensured that my direct reports are more engaged with that part of my job. I bring them to meetings, and communicate more to them about what is taking place above me.

P3 observed on numerous occasions that she is usually the only woman in IT leadership at meetings. She does not understand why more women are not in IT because

IT is such a great field. P3 has also observed the negative attitudes towards women in IT during the course of her career. To her knowledge she has not experienced any salary or promotional barriers. Theme 3 (IT workplace and cultural challenges) was validated with the following statement:

It is uncommon to see women in IT, which I just do not understand why.

Fortunately, I have not experienced salary or promotion barriers. I am typically the only woman in the room. I have been in meetings with vendors where the salesman never makes eye contact with me, and tries to sell the technology to the men. It is pretty funny when they learn I am the boss.

P3 has no plans to move into another position or work as an IT executive leader for another company. She validated Theme 4 (purposeful and strategic thinking) by saying,

I am at the top of my career. I hope this is my last job before retirement. I have worked at large organizations and small ones. I am very happy where I am now. After this, I would like to do more with non-profits and volunteer work.

P4 Individual Textural Description

P4 held supervisory and managerial roles prior to getting a middle management leadership role. She took formal leadership training and validated Theme 1 (formal and informal preparation) said,

I was at Company D, and they had a new Manager class...they had formal leadership training. Formal training included crucial conversations, leadership style, coaching, presentation skills, and lastly messaging skills.

She works close with her boss, who works with her areas that need to be improved. P4 believes that informal leadership preparation is the most effective form of leadership preparation, which

confirms Theme 1 regarding most effective method of leadership preparation by saying

My boss right now has been helping me a ton. Key thing is that she provides feedback.

Let's me know what I need to work on.

She also believes that it is important to

ask for feedback.

P4 experienced many shifts in how she spent her time as she transitioned through multiple levels of leadership. Theme 5 (managing transitions and self-renewal) was confirmed when she said,

From manager to director, the change was instead of [spending a lot of] time implementing the plan it was [spending time] figuring out what the plan should be, and [spending time] focusing on how we do it better next time through that process. [Spending time on making] improvements rather than just executing.

She believe that motivational skills are essential and that leaders should know how and when to use these skills to rally their employees. She said,

...learning how to give a good motivational speech. Knowing when people need it, and crafting it.

P4 believe it is important to understand what you want. She confirmed Theme 4 (purposeful and strategic) when she said,

Still thinking I'll be a CIO someday, not sure where or what size company.

She added,

Let people know what you want. I made the mistake of not telling someone that I would be interested in a role that was filled by a great manager. Turned out his family had issues where he had to quit to take care of a family member who's health was failing

and I missed that opportunity by not saying that role would be interesting.

Theme 3 (IT workplace and cultural challenges) was validated when P4 explained what it was like for her to pursue a degree in a male dominated field and the attitudes and behaviors she that she faced in the IT workplace. She explained,

During college, I was one of two Caucasian blond females in Electrical Engineering and the University. I would walk into a lab, and know as each person walked in that no one wanted to sit next to the “girl” and have her as a lab partner all semester. I walk into a new project kickoff meeting with some people in the company that I haven't met before, and one of my business colleagues starts the meeting. Another colleague says, "Hey, shouldn't IT be here." I reply, "IT is here." He turned bright red.

She continued to say,

A few years ago, as a consultant, I walked down to a networking picnic with all of the clients and consultant team members. One of the client team members was making small talk and said, "I know you are an engineer. What happened? Didn't your father have any sons?" It was a serious questions. Not really sure what to say, I responded, "All my father's children are engineers: me, my brother and my sister."

P5 Individual Textural Description

P5 said,

I was a consultant for several years before I was hired by one of my clients to be the Director of IT.

She has taken formal leadership preparation training, and has also engaged in informal leadership preparation, she accredits her formal leadership preparation as the most

effective. P5 validated Theme 1 (formal and informal preparation for leader) by saying,

While in my current position, I took a leadership class with my peers that was offered internally, I had a 360 analysis and I was also given a professional coach that worked with me on developing my leadership skills.

She also confirmed Theme 1 regarding most effective leadership development methods when she added,

I informally prepared by learning how to ask questions, listen to people within the organization, observe business processes and then propose improvements. I continually attend professional meetings outside of work that are hosted by the [professional] organizations I am a member of. [Regarding formal preparation] The 360 and coaching was the most helpful.

P5 shared that there are workplace and cultural challenges for women in her organization and perceive that men at the executive level are not very respectful of women in IT leadership. P5 confirmed Theme 3 (IT workplace and cultural challenges) when she expressed the following:

I have always worked with all male IT departments and with all male executives. It has more difficult getting the respect of the men at higher levels. They don't seem comfortable with women. I get the impression they want to be able to joke around and not have to worry about offending a woman. I continually have to push my boss to get visibility within the higher ranks so they can get to know me better.

P5 has plans to move up the career level into executive IT leadership. Theme 4 (purposeful and strategic thinking) validated when she said,

I want to be part of the top leadership circle within a company as a CIO or VP. IT is

tightly integrated in all parts of the business and I want be in a role where it is recognized as one of the top priorities for a company. I also want to be in a position where I can influence the future direction of a company.

P5 is experiencing shifts in her leadership that is requiring her to do things differently and to have a different focus. She is trying to balance short-term decisions and initiatives with long-term strategy, which is somewhat challenging. Themes 4 and 5 were validated when she stated,

In my current position I am trying to focus more on IT strategy and also learning more about the business, its products and operations, so I can get visibility among the executives. I enjoy programming because you can get immediate results. When dealing with strategic issues it takes longer to see the results. So I struggle with that because immediate results are valued. It's harder to see the value when dealing with bigger picture issues because they take longer to materialize.

P6 Individual Textural Description

P6 original training was in the Sales department of a technical company where she spent months in a training program, eventually she was placed in a management position where the skills that she learned in the Sales department were beneficial. Theme 1 (formal and informal leadership preparation was confirmed with the following description.

My original training was in systems engineering, I went through a sales training program in Company F. I was sent off to management training and so it was pretty formal back in those days. I spent 18 weeks in a classroom and it covered everything from technical training but also through sales and presentation-type stuff. So my first leadership position which I'm gonna say was my first management was when I worked for Company F.

P6 followed in her father's footsteps, he was an engineer and had his own business, which she also is an engineer and owns her own company. Her father was also her mentor and role model and greatly influenced her leadership. She also credits a former boss for role modeling what effective leadership look like. Theme 2 (mentoring, sponsorship and networking) was validated when P6 said,

My father... I followed in his footsteps. I was an engineer which he started as because I saw how he was able to leverage a very technical background into running his own business. Someone else I really admired was uh...I actually did a time where I worked for the CEO of a small pharmaceutical company ...I went to work there because I really admired the CEO who really was very tenacious about the mission and articulate and clear and uh was...was able to motivate his organization to really produce and focus on what was really needed. Those are two people that I really admired.

P6 experienced a shift in how she went about doing her job as a leader and owner. As she moved into different levels of leadership her focus shifted from short term thinking to looking at things from a long-term perspective. However at one company, she found herself having to operate at a middle management level in order to raise the skill set of her management team. Theme 5 (managing transitions and self-renewal) was confirmed when she said,

The day to day things changed a lot, some of the changes I had to deal with came through my boss who was the CEO. [it] had to be prioritized you know... they're often high- maintenance people. Um...I also had to get involved in some ways at a lower level of detail than I typically would be involved in because [of the] the skill set of the

team that I had. So I was picking up some responsibilities that I normally would have sent off to somebody else to do, I also had a physical change in my work day to day...being in the office all the time and needing to oversee people's activities more closely.

Her advice to women confirmed Theme 4 (purposeful and strategic) and is expressed in the following way:

Pay attention to where the world is going. It is not standing still and be flexible, it's critical to be flexible. Um how we do business today is not how we are gonna do it tomorrow. Learn the language...be comfortable working with not all the information because nobody has it.

P7 Individual Textural Description

When P7 was a volunteer she became a leader when no one else was interested. She had no previous experience leading people and used a trial and error approach to leadership. Later in her career she spent time in a lengthy formalized method of leadership training. P7 validated Theme 1 (formal and informal preparation for leadership) with the following statement,

My first, well, okay...my leadership position came because nobody else wanted to do it. It was volunteer work. I stepped up. Um and that was in an informal way of developing skill because when you're dealing with a volunteer organization and it was a volunteer non-profit, uh when you're dealing with a volunteer non-profit organization, they're pretty forgiving about mistakes and you live and you learn. You know keeps your eyes open, figure out what worked, what didn't work and you learn and you move on. So that's really the informal [leadership preparation]

process.

She added,

Um for me, the formal one [leadership preparation], however, my true first leadership [position] the experiences was in the military and there is a very formalized educational process for teaching leaders. The US Army is one of the best leadership schools in the world and they take their time. They recognize that it's not something you learn overnight.

Um so in my current position, my formal preparation for it was more along the lines of understanding the industry because I was kind of shifting industry a little bit. Uh IT is a universal thing but IT is one of those things like finance or HR or manufacturing...the discipline is universal but the specifics of the industry are different and so for formal [preparation] I specifically went after learning the aspects of the industry.

P7 has the support of her supervisor who helps her a lot. Theme 2 (mentoring, sponsorship and networking) was confirmed when she said

Um I am very fortunate right now in that my Current manager does that. He listens, he guides, he makes suggestions.

She believe both informal and formal leadership preparation are important, she confirmed Theme 1 regarding most effective leadership development method by stating,

Uh...they both have strong points. In the formal education, you're gonna be presented with things that you wouldn't have thought of otherwise.

Throughout her leadership career she had to develop critical leadership skills in order to be an effective leader. This was especially needed because she had 150 employees

reporting to her. Theme 5 (managing transitions) was confirmed when she offered the following:

So as I became a manager...the number one job skill you have to develop is delegation, and the ability to guide without micromanaging...let the experts do their job. Um never assuming I can do it all because I manage an organization of 150 people...the biggest thing I would tell you is ... "know what your job is and stop trying to do other people's jobs.

P7 would give the following advice to women and confirmed Theme 4 (purposeful and strategic thinking).

Uh one of the things that I consider to be important for a leader is a dose of humility that you have to walk a fine line of confidence and still be humble. Do your homework, and finding connectors in the networking system is a huge thing that helps you.

P8 Individual Textural Description

P8 started as a supervisor and worked her way up the leadership ladder to her current IT middle management position. In her first supervisory position she had no leadership preparation. This is how she expressed her experience,

...there wasn't a preparedness. It was more of jumping into a role and figuring it out as I got there and having my boss provide some good support but really...it's on the job, deep end of the pool, school of hard knocks.

In her current position, her boss supported her by providing a professional coach to help with her leadership development. She said, "I engaged a coach that really helped me professionally". I would say that's one formal way that I've prepared". When P8

compares her informal leadership preparation to her formal leadership preparation, she said,

I think you actually have to do both at times. If you don't do the informal things, read, and stay current with trends in IT... I think it actually would be the informal to stay current with trends and be mindful of what the formal "leadership" things are on an ongoing basis but I think you would be foolish not to do a combination of them.

Theme 1 (formal and informal leadership preparation) were confirmed by P8,

P8 does not spend much time thinking about gender issues in the workplace and observed that there are more men in her division than women. Following is her statement that also confirms Theme 3 (IT workplace and cultural challenges).

I guess part of the thing is I don't think much about being a woman minority even though I am. I'm the only woman on my boss's staff but I don't think about it as often as maybe I should... the Asia director is also a woman so 2 of 10 that's not such a good percentage.

As far as career planning, P8 is currently evaluating what she want to do in the future, she confirmed Theme 4 (purposeful and strategic planning) by offering the following:

I'm at a crossroads right now quite frankly, maybe not completely financially dependent but pretty close and I'm contemplating several different path. One is becoming a CIO.... I realized that hey, if I was going to do that I should probably do some more stuff to prepare for that and I had joined the Society of Information Management...a CIO mentorship program that's a two-year program I was going ... get signed into the program...um but I...but I felt I needed to actually do some networking and talk about the areas that maybe I'm not as strong in that would be

requirements for a CIO.

In order to be an effective leader, P8 believes that you have to develop long range planning skills. She said,

You gotta know what you're trying to accomplish and help frame where that is so really having big picture skills and how to build a framework that helps people understand from either a business perspective...to get everybody on the same page that's a really important skill.

This validates Theme 4 (purposeful and strategic thinking) and Theme 5 (managing transitions and self-renewal).

P9 Individual Textural Description

P9 recalls that it was not always obvious that she was being mentored, she said,
uh you know and even though your boss may say well, you were mentored along, it wasn't obvious to me if I was being mentored

Her statement validated Theme 2 (mentoring, sponsorship and networking).

As a leader starting a new job, P9 encountered gender and ethnic issues in the workplace by one of her employees that she immediately addressed, she recalls the following experience:

When I first came to Company I ...as a leader there I remember that the team that I was leading there was a guy in there. He was really angry because he had apparently applied for the job but he didn't get it ...I remember coming in he said this to me when I first met him. He goes well you know why you got the job? He goes it's cause you're a two-pointer and I said I beg your pardon. He goes because you're not white and you're...and you're a girl.

Her statement validates Theme 3 (IT workplace and cultural challenges).

Regarding whether or not she is planning another leadership move, she said,

I am not necessarily excited about going to be a CIO at another corporation ...I'm thinking I might do consulting.

This validates Theme 4 (purposeful and strategic thinking).

P9 encountered major shifts in leadership that impacted how she spent her time, which also required her to develop new skills, and her leadership strategy. Theme 5 (managing transitions and self-renewal) was validated when she said,

...being a leader of a global team...when you have people in different time zones you've got to learn how to adjust. So for example, I had people, at the extremes, I had people in Europe and then I had people in Asia, plus I had people across different time zones in the US and what we would do because obviously we couldn't always travel for our team meetings we had a schedule out so everybody knew when certain people were gonna have to be on the phone at weird hours and um I...what I would...so we would do that as a team and me as a leader to hold like one-on-ones...for example that I might start my day really early so that I could be home to do the one-on-one with the people in Asia.

She added,

Um I mean, from a global business perspective, when you're in a more senior leader position you're dealing with business partners and potentially you might be dealing with customers of the company as well...you have to learn how do you deal with your peers? How do you deal with the board of directors? How do you deal with customers? Because you might be called upon to uh talk to customers, we were all expected to attend the annual meeting of the

shareholders ...certain members of the executive team were expected to reach out and...at the pretty cocktail party and you know talk to these shareholders...you had background on them. You had to understand how many shares they held, how long had they been an investor, what they did for a living and you had to be able to answer their questions about the company. So even for me, even though I was in charge of the technologies group, I still had to be able to answer questions, general questions from [stakeholders and investors] about our overall company operations.

P9 talked about how her Japanese family culture influences decisions she makes as a leader. Theme 6 (work life balance and family influence) was validated when she expressed the following:

My parents during World War II were put into the [unaudible] camps and...and my grandparents were as well and I just remember...this is a very cultural thing probably for me and a lot of people in my generation whose parents were put into those camps, when they come out I remember being raised to just always...you always needed to be like the best. You were raised to never bring dishonor to the family name and you, especially with my grandparents...[said] we want you to be recognized because of your merit and because of your skills and not be treated differently because who...what you look like or the fact that you don't have blonde hair or blue eyes and all that. And so um my focus has always been...that really drives me is like not bring dishonor to the family name and so everything you do you...always say is this going to be a good reflection on me and therefore my family?

P9 offered the following advice to women that confirm Theme 4 (purposeful and strategic thinking), she said,

They [women] do need to understand the technology but boy they really need to be able to understand the business as well...if you do aspire to senior leadership and maybe C-level leadership uh it's not good enough to just understand the technology.

APPENDIX I

Individual Structural Description

P1 Individual Structural Description

P1 is an IT executive leader, a Chief Information Officer (CIO) and is at passage 5 of the LDP continuum. She has over 31 years of experience in technology and has been in her current position for nearly 2 years. P1 has a master's degree, works in higher education and resides in the western region of the U. S. Although she did not have any formal preparation for her first leadership position, however in her master's program she took many management courses, which contributed to her formal leadership preparation. Later in her career, attended many types of leadership preparation training and networked with others and built long term relationships.

As her leadership responsibilities increased she had to make changes in her time allocation on the job. For example, when she moved from assistant vice president to vice president/CIO, she spent more time on leadership and strategy asking herself, what are we going to do, instead of, how are we going to do it. As a leader, she observed that women come into the workplace from a humbling perspective, especially those from the Asian and Latino cultures. She believes that this perspective works against women in the IT workplace.

Although P1 does not recall ever having a mentor, the people in her professional network were available to her for peer coaching. She has been a sounding board for others and has been involved in mentoring programs where she mentored others. Although she believes that the most effective form of leadership development are formal programs because it connected her with people that she was able to build long-lasting relationships with, it is clear

that the informal leadership preparation had a great impact on her leadership as well.

P1 shared was that she applied to an executive level position at her former company and although she felt that she deserved it because of all of the hard work that she did, it was given to a male. P1 has a strong desire to stay with that organization and remained there. She initially believed that she did not get the job she did not have a Ph.D. and the other person had one, or maybe it was because she was a woman, or both. She was very disappointed. After consulting with a male supervisor, he told her that she need to be thoughtful about what she wanted to do and why, where she wanted to live and develop a leadership transition, which she did. P1 is married and has relocated at least three times to take a higher level IT position with increasing levels of responsibility. The leadership plan that she developed was beneficial in helping her get her current job which required her family to relocate. One of the setbacks of relocation is that it has impacted her retirement benefits package. Together, P1 and her spouse decided that this would be their last relocation. Her future plans are to stay in her current position and with the organization until she retires.

P2 Individual Structural Description

P2 is currently a Vice President/Chief Information Security Officer at private sector organization that is located in the western region of the U. S. She is at passage 5 of the LDP continuum. She has a MBA degree, over 20 years of experience in technology and has been in her current role for three years. She held numerous managerial positions before entering into IT executive leadership. P2 specializes in information security, compliance, strategy development, and execution in the wireless, mobile, security architecture, and security engineering markets. Her current boss who she worked for previously at a previous company asked her to come to a new company to help him with security. She considers her boss as her sponsor because he

advocates for her, which she feels fortunate to have his support. P2 was given a professional coach to help her enhance and strengthen her leadership. For her, the most effective form of leadership preparation is the informal method, although she says that she did not overestimate the importance of self-awareness and knowing herself. She had several opportunities to lead successful highly visible assignments within her organization, which has been beneficial for her career—she is recognized as an expert in her field and is highly sought after by recruiters and other organizations. As she climbed the leadership level she had to use and develop different skill sets, manage her time differently and shift from focusing on day to day management to long term strategic activities.

As a Latina female, P2 has experienced direct negative behaviors towards her, and has observed that women in technology fields are oftentimes relegated to jobs that are more clerical in nature such as project coordination roles. This is something that women should watch out for because it is important that they be seen as technically competent. She believes that relegating women to a lower level of authority such as in a clerical role, impacts their compensation and movement in the organization. P2 is not seeking a CIO, CTO or CEO position but plans to write more and serve on governing boards after she retires.

P3 Individual Structural Description

P3 is a CIO and works for a government entity located in the western region of the U. S. She also has experience in various private sector industries. P3 has 31 years of total IT experiences and has held multiple managerial and leadership at different organizations. She has been in her current position at the IT executive leadership level, which is Passage 5 on the LDP spectrum for over three years. P3 has a bachelor's degree in computer science and has a master's certificate in public affairs. She also completed an executive leadership development

programs. Networking with other CIO has been very beneficial and has helped her leadership development tremendously. P3 believes that both formal and informal methods of leadership development are equally valuable because they allow for the development of different skills and knowledge.

P3 experienced an eye opening experience that shaped her leadership development when she discovered that she had used the wrong approach with her former leadership team. In her quest to shield and protect them from politics at the higher levels, they did not develop the appropriate skills needed to deal with executive management. This resulted in loss of employment for her former second in command.

P3 has not experience any promotional and compensation barriers but has been overlooked by salesman in meetings; they did not make eye contact with her until they found out that she was the boss. She also observed that she is usually the only woman in the room. P3 does not understand why more women are not in IT leadership because it is a rewarding field. She is at the top of her career and considers her current position her last job before retirement. P3 would like to do volunteer work with non-profit organizations after retirement.

P4 Individual Structural Description

P4 is a Senior Director of IT at a private sector organization located in the mid-western part of the U. S. She has an MBA degree with 23 years of experience in IT. She is at IT middle management level, which is passage 4 of the LDP spectrum and has been in her current position for one year. P4 first entered into the leadership pipeline as a supervisor before joining her current employer where she was immediately enrolled in a leadership training program. Her current boss has been a supporter and provides her with constructive feedback to help her strength her leadership capabilities. P4 mentors others and tries to do everything that she can to

help others break through the glass ceiling. She believes that informal leadership preparation is most valuable because she had been able to get constant feedback on how she was doing and what areas needed to be improved. At one point, she told her that she was too “intense”, which was an eye opening for her. The next time things got stressful she was very thoughtful in what she said and how she handled the situation. She definitely remembers that there were significant changes in her leadership skills, strategy and how she spent her time, when she went from supervisor to manager and from manager to director. P4 encountered several negative experiences because of her gender throughout her time spent in college where she was passed by daily in an engineering lab because no of the males wanted to sit next to the girl and be her lab partner. She also directly experienced male business colleagues joking about her being an engineer, asking questions like, what happened didn’t your father have any sons? In another instance, she has also been discounted and overlooked as the IT representative at meetings. P4 made a mistake of not making it known that she was interested in a leadership role that became vacant, therefore she missed an opportunity. Her advice to others is to let people know what you want. P4 wants to become a CIO one day but is not sure about where or what size company.

P5 Individual Structural Description

P5 came in to IT as a Director from a consulting role and has 32 years of IT experience and has an MBA degree. Her organization is located in the mid-western part of the U. S. She has been in her current job at passage 4 of the LDP spectrum for 10 years. P5 credits work that she did as a consultant, although it was informal preparation, with helping her to prepare for leadership. She has taken leadership development training and found that the 360 analysis and the professional coaching was the most effective and beneficial for her leadership preparation.

She also believes that it is important to ask a lot of questions and listen to people, as well as observe business processes and identify areas in the organization that need to be improved. She is finding that different skills are required for her current job, and that it is a challenge for her to focus on long-term strategy because it takes longer to materialize. Her experience has been that it is the immediate results that are valued the most in her organization.

P5 has always worked with all males in IT and with all male executives. It has been difficult for her to get respect from the males at the executive level. She believes that they are uncomfortable around her because they want to make jokes about women without worrying about offending a woman. She continually pushes her boss so that she can get visibility in the company. Her advice to other women is to become a technical expert in several areas and be a good communicator and team builder. She says that building a team enhances your leadership development skills. P5 has not been involved in formally mentoring others as of yet and would like to become a CIO or a vice president one day.

P6 Individual Structural Description

P6 started out working in the sales department in systems engineering division of a large technical company located in the Midwestern region of the U.S. She has 36 years of experience in sales and technology. She spent her first four and a half months in formal technical and management training that cover every aspect of her job. At an early age, she was influenced by her father who was an engineer and owned his own technology company. She worked during the summer for her father. She followed in his footsteps and became an engineer also. After working for another company she decided that she wanted to start her own company. P6 has a MBA, and has been President of her own technology company for 26 years. She is at passage 6 of the LDP continuum. P6 credits her father and another one of her former

supervisor's for role- modeling effective leadership. She is always seeking ways to improve her leadership because leadership is a continuous development process. Therefore, she is always looking for effective workshops and seminars on leadership.

When P6 transitioned from a management role to lead her own company, she made significant changes in her leadership strategy, what she spent her time on, how she managed her time, which required her to acquire and utilize new skills. Her advice to other women is that it is important to make the shift in job requirements as they rise in the organization—each level required new skills and focus. She also believes that you have to be mindful and allocate specific time to work on strategy.

P6 has noticed that IT is mostly male, especially in her specialized area of network infrastructure. She is an advocate of mentoring and is on an established mentoring committee that pairs four for mentees with two mentors, and found it to be really effective. She is concerned about aging out of the mentor and networking pool because of her age. She would like to find younger women to start networking with. At the current time, P6 is exploring options to transform her company, which is something that she does every 3-4 years in order to keep up with the technology industry and the demands of her clients.

P7 Individual Structural Description

As a volunteer in a non-profit organization, P7 stepped into her first supervisory role when no one else was interested. For her, it was trial and error because she had to figure out things on her own—what worked and what did not work. She was not offered any formal leadership preparation. It was sink or swim. Fortunately for her, non-profit organizations are more tolerant and forgiving of mistakes, especially with volunteers. Her first true leadership position was in the armed forces where she went through years of leadership development

training to become a commissioned officer. After military life she also took formal leadership development training and feels fortunate that her current supervisor mentors and coaches her. P7 is a Director at passage 4 on the LDP continuum. She has a 150 people reporting to her and believes that good delegation and guidance without micromanaging is an essential skill to have. She has a juris doctorate and doctorate degree and a total of 13 years of experience in IT. She has been in her current role for one year. Her company is in the private sector and is located in the Midwestern region of the U. S.

P7 switched her mode of leadership as she moved up to higher levels of IT leadership because her new role required her to focus more on strategy and less on day to day activities. She also changed what she spent her time on and how she managed her time. Her primary work areas and focus changed when she became responsible for operations in different time zones sometimes requiring taking calls at 2 o'clock in the morning. P7 sponsors two women. Her boss is also sponsoring her to be a vice president, and has enrolled her into the company's sponsorship program.

While on a training expedition when she was in the armed forces, she learned a valuable lesson from an eye opening experience. As a commissioned officer, she dictated to a subordinate how to do his job. Although the subordinate was an expert in his field, he was required to follow his Commanding Officer's instructions. Therefore he executed the order as commanded. The results of the order put lives in jeopardy and unnecessarily destroyed government property valued at millions dollars. She faced a court martial but was extremely fortunate that all charges were dismissed. She states that is important to know how to delegate and that leaders should let the experts do their job.

P7 has experienced discrimination working in a male dominated environment both in the

armed forces and in the civilian business sector. P7 has heard all of the micro aggression. She has been talked over by men and her ideas have been ignored and/or discounted. However, she observed that when a male brought forth the same idea, he was praised for it. She has also observed gender bias issues and negative behaviors towards other women in the organization. Since she now does a lot of online communication via email and other forms of written correspondence, she found that shortening her name to make it more gender neutral proved beneficial to being prejudged as a woman. P7 is concerned that gender bias issues have become so common in the workplace, and that a lot of women appear to be blind to it or just accept it as business as usual.

P8 Individual Structural Description

P8 has 13 years of IT experience and has a MBA degree. She has been in her current position for a little over one year at a private sector company, which is located in the Midwestern region of the U. S. She had no previous leadership preparation prior to her first position as supervisor. In her current position as Senior Director of IT at passage 4 on the LDP continuum. Her boss hired a professional coach that she used for a three year period that helped her strengthen her leadership capabilities. Mentoring is part of the framework at the company where P8 works and contributes to the success for many employees at the company. It is also needed to ensure that the leadership pipeline is stocked with potential leaders. She plans to continue mentoring younger women and networking with professional organizations, especially those that promote STEM. In her experience, for her, the informal methods of leadership development, things like reading and staying current in your field, understanding the trends are more effective than formal leadership preparation methods. She also says that leaders should be mindful of what's going on in the formal leadership arena.

As P8 moved into a higher level of leadership, she now spends about 70% of her time working on the business and management team to lay out an IT roadmap, the rest of her time is spent on vendor relationships, procurement and professional services. In her current role she says that vision is critical because says that you have to know where you are going and what you are trying to accomplish. P8 expressed that she does not focus on being a woman minority but probably should because there are only two women on her boss's staff out of 10 Directors which according to her, is not a good percentage. Her advice to women is that you must be competent have everything you need in your toolbox, pick someone to emulate and don't assume people are going to notice your work—you have to figure out a way to demonstrate your value to the organization. One day she is hoping to become a CIO and has started leadership transition planning; she is currently enrolled in an executive leadership program that is offered through the Society of Information Management (SIM).

P9 Individual Structural Description

P9 has a bachelor's degree and entered the IT field from business financial industry. She has twenty two years of IT experience, and has been in her current job for eight years. She states that she had never had any formal leadership development training. P9 emulated leaders that she thought were good and effective. Although one of her bosses claim to have been her mentor, it was not obvious to her that she was being mentored. Her advice to other women is to develop self- confidence.

P9 is Asian and her family culture has influenced her leadership. Her mother, father and grandparents were placed in concentration campus, which has had a profound impact on how they reared their children. For example, it was instilled in them that they should always do their best at everything they do and not do anything that would bring dishonor to the family. Still

today, when she has to make leadership decisions she always stop and ask herself, will her actions and/or decisions bring dishonor to me and my family? At one point she worked for a company that was taken over by the federal government that was an eye-opening experience. She also experienced first-hand the impact of 9/11 as she had employees who were impacted in the New York area. She had planned to meet with clients at the World Trade Center that morning but the clients were not ready, so the meeting was cancelled. She believes that things work in mysterious ways and that everything happen for a reason.

The most significant changes in her leadership strategy became obvious when she was responsible for global operations and for people who work across the world in different time zones. She was expected to deal with clients and shareholders at business functions such as cocktail parties, galas, and other types of events. She was also expected to know their background and answer business related questions, if they came up during the course of conversing. At this level her focus was on strategy and strategic outcomes. One time when she had just started a new leadership position, she was confronted by a White male who directly said disparaging remarks to her saying that she only got the job because she was a woman and because she was not White. She addressed the issue with him immediately. She made it very clear to him that she would not tolerate that type of behavior. She also told him that if he could not respect women and diversity that she would fire him. P9 is exploring the possibility of starting a consulting business.

APPENDIX J

Invariant Constituents and Theme Development Relationship

Table 14.

Invariant Constituents and Theme Development Relationship

Invariant Constituent	Final Invariant Constituent	Group Name
<i>Began As:</i>	<i>Changed To:</i>	Final
Education Work Experience Leadership Level Time in Current Job Total IT Experience Geographic location	<i>Demographics</i>	Demographics and Participant Profile
Invariant Constituent	Final Invariant Constituent	Theme Name
<i>Began As:</i>	<i>Changed To:</i>	Final
Leadership	<i>Leadership Development</i>	Theme 1: Formal and Informal Leadership Preparation
Mentoring	<i>Mentoring, Sponsorship, Coaching and Networking</i>	Theme 2: Mentoring, Sponsorship and Networking)
Gender Issues	<i>Boys Behaving Badly</i>	Theme 3: IT Workplace and Cultural Challenges (Theme
Career Moves	<i>Future Plans</i>	Theme 4: Purposeful and Strategic Thinking
Advice for Women in IT Fields	<i>Success Strategies</i>	
Changes in Job Requirements	<i>Making a Paradigm Shift</i>	Theme 5: Managing Transitions and Self-Renewal
Balancing Work and Personal Life	<i>Work, Life and Family</i>	Theme 6: Work Life Balance and Family Influence
Catastrophic Events	<i>Set-Backs, Eye Opening Experiences, and/or Catastrophic Situations</i>	Theme 7: Strength and Resilience

APPENDIX K

PEER REVIEW OF PHENOMENOLOGICAL ANALYSIS AND INTERPRETATION

by Deborah A. Obara, Ph.D.

As a doctoral student, Marilyn completed the introductory and advanced qualitative research methods courses that I taught at the University of Nevada, Las Vegas. Consequently, she asked me to review the data analysis and interpretation sections of her dissertation. Given that she designed the study as a phenomenology using Moustakas' (1994) highly structured analysis methods, I could determine the quality of the data analysis by determining her fidelity to the structured methods.

Moustakas' analysis methods included an epoche that bracketed the researcher's relationship with the phenomenon, significant statements by the participants concerning the phenomenon, meaning units derived from the statements and clustered into themes, textural descriptions of what the participants experienced, structural descriptions of how the participants experienced the phenomenon, and a description of the essence. Marilyn remained true to Moustakas' methods. Prior to data analysis, she bracketed her own experiences as an IT executive to reveal her biases and enhance her ability to see clearly through the participants' eyes. Reflexivity was maintained throughout the study. In the initial phase of data analysis, she searched verbatim transcripts of interviews for significant statements and clustered them into meaning units and themes. In the final phase of analysis, she wrote textural and structural descriptions then synthesized them to realize the goal of the study—to describe the essence of the experience of women who are IT executives transitioning to new levels of leadership.

Although I could replicate her clearly stated analysis steps, my interpretation of the essence would reflect my own background knowledge, experiences, and context.

For example, I have experienced some of the same organizational frustrations represented in the participants' quotes, but I have not experienced them in an IT context, and I do not share the researcher's constellation of background knowledge and experience. Different interpretations should not be regarded as less rigorous interpretations.

Based on my review, Marilyn demonstrated analytical rigor because she conducted the data analysis with fidelity to Moustakas' methods for systematic phenomenological analysis. Furthermore, she supported the analyses with thick description, relevant quotes, and an appendix with supplemental data. Marilyn also demonstrated interpretive rigor because her description of the essence was grounded in the data; she used quotes that revealed the participants' voices and the researcher's understanding. I came to understand the essence of the women's IT leadership experience by hearing their voices and seeing through their eyes, which is a key objective of a phenomenological study.

APPENDIX L

Postscript

While this is a phenomenological qualitative study, it is recognized that working with quantitative methods, and data in the information technology field over the past 30 years may have shaped the lens of the researcher in terms of the structure of the questions in this study.

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CURRICULUM VITAE

Marilyn Delmont, Ph.D.

Email Address: mtdelmont@gmail.com

EDUCATION

University of Nevada Las Vegas 2016 Ph.D. Workforce Development and Organizational Leadership	Las Vegas, NV
League for Innovation in the Community College Executive Leadership Institute 2015 American Association of Community Colleges (affiliate)	Phoenix, AZ
Minnesota State University 2010 Masters of Public Administration	Mankato, MN
University of Virginia 2006 Darden School of Business & Management Executive Leadership Program	Charlottesville, VA
Tarkio College 1987 Bachelor of Science, Management Information Systems	St. Louis, MO
Control Data Institute 1980 Technical Certificate, Computer Programming/Operations	Minneapolis, MN

PROFESSIONAL WORK EXPERIENCE

TECHNOLOGY & MANAGEMENT CONSULTANT Principal Consultant	Las Vegas, NV 2012-present
UNIVERSITY OF NEVADA LAS VEGAS Educational Outreach (contract position)	Las Vegas, NV 2015-present
NEVADA SYSTEM OF HIGHER EDUCATION Vice Chancellor, Information Technology/CIO (interim) Associate Vice Chancellor/COO, Information Technology	Las Vegas, NV 2010-2012
MINNESOTA STATE UNIVERSITY Vice President/CIO, Information Technology	Mankato, MN 2007-2010

CITY OF CHANDLER Chief Information Officer	Chandler, AZ 2002-2007
METROPOLITAN AREA TRANSIT AUTHORITY (MARTA) Chief Information Officer Acting Vice President Director IT Applications and Systems	Atlanta, GA 1998-2002
EMORY UNIVERSITY/ CARTER PRESIDENTIAL CENTER Director, Computer Information Systems	Atlanta, GA 1994-1998
GEORGIA LOTTERY CORPORATION Games Administration, Audit and Compliance Officer	Atlanta, GA 1993-1994
SPELMAN COLLEGE Director, Management Information Systems	Atlanta, GA 1991-1993
AMOCO OIL CORPORATION Acting Director, Computer Services/ Systems Analyst	Alpharetta, GA 1990-1991
CONTINENTAL TELEPHONE CORPORATION Corporate Curriculum Development Analyst IT Corporate Trainer IT End-User Consultant	Atlanta, GA 1988-1990
MONSANTO AGRICULTURAL RESEARCH CONSORTIUM Information Technology Trainer Information Center Consultant	St. Louis, MO 1986-1988
DIGITAL EQUIPMENT CORPORATION Service Delivery Consultant VAX Systems Conversion Trainer	Landover, MD 1985-1987
UNIVERSITY OF MARYLAND HOSPITAL Supervising Programmer Analyst	Baltimore, MD 1983-1985
CONTROL DATA CORPORATION Computer Programmer Specialist PLATO Computer System Instructor Office Assistant, VP of Human Resources	Minneapolis MN 1978-1983

GOODYEAR TIRE COMPANY
Computer Operator

St .Louis, MO
1977-1978

MCDONNELL DOUGLAS CORPORATION
Computer Operator
Engineering Intern

St. Louis, MO
1974-1977

WORKSHOPS AND TEACHING EXPERIENCE

Diversity Workshop	National EDUCAUSE Conference
Diversity “You can make a Difference”	Minnesota State University
Project Management 101	City of Chandler
Intro to LAN	Monsanto Corporation
Desktop applications (PC/MAC)	Monsanto Corporation
Desktop applications (PC)	Continental Telephone
Leadership Training	MARTA
Six Thinking Hats	NSHE IT Leadership/City of Chandler IT
Professional Etiquette	City of Chandler IT
Statistical Analysis (SAS)	Digital Equipment/U.S. Dept. of Agriculture
Intro to VAX/VMS	Digital Equipment/Continental Telephone
VAX to IBM Conversion	Digital Equipment Corp/U.S. Dept. of Agriculture

CERTIFICATION/CERTIFICATES

2009	Minnesota State University Diversity Institute
2008	National Incident Management Certification
2007	MnSCU Equal Employment Opportunity Investigation
2006	Computer Security Awareness for Executives
2006	Executive Leadership Certificate
2000	IT Certified Project Manager

RECOGNITION AND AWARDS

2015	League of Innovation Executive Leadership Institute
2011	Nevada Good Government Award Honoree
2010	Minnesota State University “Women of Vision”
2009	Minnesota State University “Women of Vision”
2009	Campus Technology Innovators Award
2006	Digital Cities Award
2006	CIO 100 Award
2004	CIO 100 Award

2004	Digital Cities Award
1992	Georgia Lottery Corporation – “You Made It Happen” President’s Award
1990	Amoco Research Corporation – Total Quality Management Achievement Award

BOARD, COMMITTEE AND VOLUNTEER WORK

2016	UNLV Bookstore Graduate Student representative
2015	SIM (Workforce, Education and Legislative Councils)
2015 -	United Way of Southern Nevada, Adult Learner Committee
2015 -	UNLV Adult Learner Council/ Re-entry Scholarship Committee
2014 -	Dress for Success Mentoring Program
2011-2012	EDUCAUSE West/Southwest Program Committee, Member
2011-2012	Oracle PeopleSoft Higher Education Strategy Council
2010-2012	Higher Education User Group (HEUG), Member
2008-2010	Riverbend Academy Charter School, Board Member
2007-2010	MNSCU Chancellor Committees (CIO Council, IT Finance/Procurement, Project Management)
2007-2010	Minnesota State University Committees (Technology, Extended Learning/Online Education, Strategic Planning, Malcolm Baldrige Quality, Great Place to Work, Diversity)
2005-2006	Arizona State Board of Dental Examiners, Board member
2003-2007	Arizona City Municipal CIO Leaders, Co-Founder/Chair
2004-2005	Home Based Youth Services, Board Member
2002-2007	City of Chandler Technology Governance, Chair
2002-2007	CIO Executive Council, CXO Media,
1999-2002	Omicron Training, Inc., Board Member
1998-2002	MARTA Technology Management Group, Chair
1993-1998	Emory University Technology Council, Member
1990-1992	Spelman College Technology Committee, Chair
1990-1992	EXODUS Youth Mentoring Program, Member
1990-1994	EDUCOM/CAUSE, Member

SPEAKER/FACILITATOR/EVALUATOR

2015	UNLV Thesis/Dissertation Judge (Rebel Grand Slam scholarship competition)
2014	You are Different because You are Special (Purple Wings Girls Group)
2012	Six Thinking Hats: the art of critical thinking
2011	West/Southwest Region EDUCAUSE Conference proposal evaluator
2010	Midwest Leadership Women’s Conference, “My journey to executive leadership”
2009	Midwest Leadership Women’s Conference, “Leadership challenges for women”
2009	MSU College Access Program graduation ceremony, “Education: A key to success”

2008	MSU Multicultural Student Center, “Skills needed for the job”
2008	Midwest Region EDUCAUSE Conference proposal evaluator
2008	MSU Diversity Conference, “You Can Make a Difference”
2006	Project Management Institute “The role of the executive in project management”
2006	Project Management Institute, “Effectiveness of a Project Management Office portal”
2005	CIO Executive Council –Australia “What makes a successful PMO” webinar
2005	CIO Executive Council, “Effectiveness of having a PMO portal”
2000	COMTO Conference, “Enhancing the customer experience using Intelligent Transportation System (ITS) smart technology”
1998	State of Georgia Financial Officers Association (GFCOA), “Importance of Computer Security”

PROFESSIONAL AFFILIATIONS:

Association of Computing & Machinery
 Black Data Processing Association (BDPA)
 EDUCAUSE
 Institute of Electrical & Electronics Engineers (IEEE)
 International County Manager’s Association (ICMA)
 Project Management Leadership Group (PMLG)
 Society for Information Management (SIM)/
 Women in Technology (WITI)

ARTICLES/PRESS RELEASES:

Campus Technology Innovators, August 2009
 CIO Magazine, May/June 2006
 CIO Magazine August, 2005
 CIO Magazine August, 2004
 Arizona Republic, “Technology skills makes Chandler CIO a winner, September 3, 2004
 Arizona Republic, “Chandler CIO garner honors for Expertise” August 21, 2004
 Arizona Republic, “CIO brings accolades to Chandler”, August 18, 2004
 Arizona Republic, “CIO Magazine honors Chandler, City Info Chief, August 17, 2004
 MARTA IT Focus on Computer Security”, Transit Times, Fall 2001
 MobileSys, Microsoft and MARTA Wireless Technology Partnership”, Microsof, Fall 2001
 Atlanta Journal, “Telecommuting”, Spring 1996

NOTABLE MENTIONS:

How to overcome obstacles and challenges when collaborating on philanthropic giving (unpublished)
 Nonprofit Leadership (toolkit and training template), 2014 (unpublished)
 E-Government: Adding Value While Reducing Cost, 2010

“Project Management Best Practices”, Harold Kerzner, 2006, (case study). City of Chandler
Project Management Office, pps. 122-132
CIO Executive Council Portal Project, “PMO Portal and PMO Toolkit”, 2005
CIO Executive Council Portal Project, “Effective IT Project Prioritization
Process”, 2004 “Computer Professional Handbook”, City of Chandler, 2004
“Using a Service Management Approach to Obtain Quality Service”, Georgia Lottery
Corporation, 1994
“Carter Presidential Center Information Technology Quarterly Update”, 1993-1996
“Email Etiquette”, Contel Bit by Bit Magazine, Spring, 1989
“Computer Security”, Contel Bit by Bit Magazine, Fall, 1989