CAREER EXPERIENCES OF CANADIAN INFORMATION AND COMMUNICATIONS TECHNOLOGY EXECUTIVES: UNDERSTANDING CAREER ADVANCEMENT BARRIERS AND ENABLERS FOR WOMEN AND MEN

by

Jules J. Fauteux

Submitted in partial fulfilment of the requirements
for the degree of Doctor of Philosophy

at

Dalhousie University
Halifax, Nova Scotia
June 2017

DEDICATION

This dissertation is dedicated to my sister, Louise Fauteux, who in 2013, a year before she died, celebrated this research by shouting the only word that her Lewy Bodies would permit,

"Yaaaaaay!"

Your courage was exceeded only by your love. Thank you for modelling both.

"Stand before the people you fear and speak your mind even if your voice shakes" – Maggie Kuhn

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

This case study research compares the career histories of information and communications technology (ICT) executives from across Canada. In three geographic regions: east, central, and west, eight men and eight women participated in semi-structured interviews that explored career experiences, including barriers and enablers to career advancement. Qualitative interview data for the 48 executives was coded in NVivo and analyzed to discover career advancement patterns across regions and gender. Although regional patterns did not emerge, the composite Canadian picture comparing the career experiences of ICT Canadian senior leaders exposes career advancement differences for men and women. No other studies were found that qualitatively explored the career stories of ICT men and women from across Canada.

The results of this research revealed 38 career influence themes among Canadian ICT executives categorized according to gender with a national pattern emerging but no substantial unique findings in any of the three regions. Careers were described in a manner consistent with Super's Life-Career Rainbow model and provided support for Sullivan's notion of a boundaryless career. A model of barriers and enablers to career advancement was developed. More barriers were encountered by women than men, and barriers were typically attributed to factors external to the individual where enablers were typically intrinsic in nature.

Women have consistently been under-represented in the ICT sector (ICTC, 2013, 2016). Achieving gender balance in the ICT sector is widely acknowledged as contributing to improved business results for organizations and improved prosperity for economies (Trauth, Quesenberry, Huang, & McKnight, 2008). The goal of increasing gender balance also has a social justice dimension (Noon, 2007). Insights from this research are proposed to help individuals and organizations in the ICT sector, as well as institutions like universities, industry councils, and governments to advance more women and realize the business and social benefits of gender balance.

Keywords: ICT Careers, Career Management, Leadership, Gender, Gender Balance

LIST OF ABBREVIATIONS USED

ACM	Association of Computing Machinery
ACM-W	Association of Computing Machinery Women
BC	British Columbia
CanWIT	Canadian Women in Technology
CCWESTT	Canadian Coalition of Women in Engineering Science Trades and Technology
CEO	Chief Executive Officer
CxO	Chief Officer (generic)
CIO	Chief Information Officer
CPR	Computing Personnel Research
CWIC	Canadian Celebration of Women in Computing
DNS	Digital Nova Scotia
G7	Group of 7
ICT	Information and Communication Technology
ICTC	Information and Communications Technology Council
IT	Information Technology
KW	Kitchener-Waterloo Region
NOC	National Occupations Classification
NS	Nova Scotia
ON	Ontario
SCWIST	Society for Canadian Women in Science and Technology
SIG	Special Interest Group
US	United States
VAN	Vancouver
VIC	Victoria
VP	Vice President
WCT	Women in Communications and Technology
WinSETT	Women in Science Engineering Trades and Technology
WISE	Women in Science and Engineering

ACKNOWLEDGEMENTS

I am grateful to many people for the opportunity to complete this dissertation. My thanks is offered in waves, to four groups of people. Firstly, I would like to thank the women and men of the Canadian ICT sector who shared their stories with me. It was a privilege to enter your world. Thank you for your trust.

Second, thank you to Digital Nova Scotia for sponsoring the study, as well as to related Canadian partners, The Society for Canadian Women in Science and Technology, and Communitech. In particular, thank you to Emily Boucher, Ulrike Bahr-Gedalia, Cheryl Kristiansen, Dr. Maria Isaa, and Alayne Hynes for your support in identifying potential study participants, as well as your general encouragement. You are working to make a difference in Canada's ICT sector and your work matters. Research support from Alison Forshner and mentorship from Chris Hornberger at Halifax Global was also very important to me. Being part of a team with people like you is a valuable source of inspiration.

Third, thank you to Dalhousie University and the many wonderful professors who helped me learn how to think like a scholar. They had a lot of work to do and it seems to have paid off. My Supervisor, Dr. Michael Shepherd, was especially supportive and I am grateful for having worked with him. Sponsorship as you provided is a very powerful career enabler. Our friendship of many years will always be special to me. Committee members Dr. Jack Duffy and Dr. Bertrum MacDonald provided important feedback, guidance, and support for which I am also very grateful. You are role model scholars and great people. I also had the benefit of an extended committee, including Dr. Carolyn Watters, Dr. Tom Traves, and Dr. Jim McNiven who provided valuable feedback and support at critical stages of my learning. I had the dream team in my corner. Thank you all.

Finally, thank you to my family especially my wife Mary and my daughter Julia. You have been beside me at every step of every important milestone in my life. In many ways, this is our dissertation. Thank you for your patience, for your support, and for your love, which as we know well, is all anyone needs. I have been blessed with abundant love for which I am eternally grateful. Thank you both. I love you to infinity and beyond.

CHAPTER 1 INTRODUCTION

1.1 Background

In 2014, Google, Yahoo, LinkedIn, and Facebook released workplace demographic data that rekindled a longstanding debate about the under representation of women in the Information and Communication Technology (ICT) sector (Williams, 2014). Headlines about “tech’s ugly gender problem” (Lapowsky, 2014, p. 1) shed fresh light on the persistent problem of too few women in ICT and in leadership positions. For decades it has been reported that relatively few women advance their careers into senior management positions (Wood, 2008). The number of women in senior management jobs in Canada was nearly stagnant between 1987 and 2009 (Vachon & Lavis, 2013). This problem is particularly acute in the Canadian ICT sector where female participation rates are in the range of 23% (ICTC, 2016a). Despite recent modest increases, the representation of women in the Canadian ICT sector has declined over the past 35 years to its current level as evidenced in *Figure 1*.

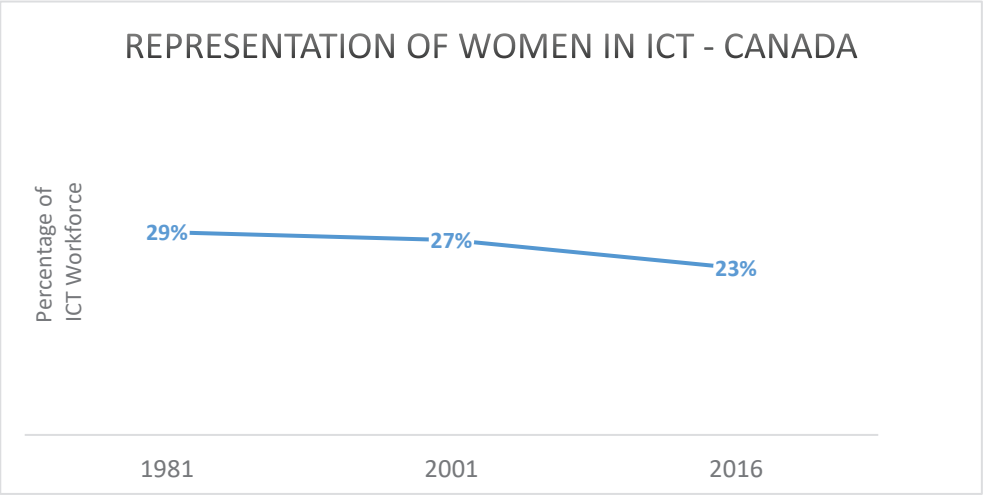


Figure 1. Women in the ICT workforce (Canada) Data for 1981 and 2001 from Software Human Resource Council (Gagnon et al., 2003) and for 2016 from ICTC (2016).

In Canada, the ICT sector has been a strong contributor to employment growth, outpacing the overall increase in employment by a factor of five to one from 2011 to 2016 (ICTC, 2016a). The ICT sector is among those expected to

experience the most significant employment growth in Canada through 2020 and is expected to incur workforce shortages and skills gaps (ICTC, 2016b). Growth in the ICT sector seems, in part, to be constrained by the apparent inability of companies to tap into what is effectively half of the potential workforce, namely women.

The gender gap at senior levels is widely considered to be more pronounced when compared to entry or mid-level jobs. The age cohort following the baby boomers is 18% smaller in the United States and Europe and a leadership shortage is on the horizon (Beeson & Valerio, 2012) and there is a need for organizations to look for new ways to groom future leaders. There is a significant body of knowledge about barriers to women's career advancement but less seems to be known about what can be done to break down these barriers and increase women's representation in leadership roles (Moody, Beise, Woszczynski, & Myers, 2003). Today and historically, women are under-represented at executive levels in the ICT sector (ICTC, 2013). It is likely that James Cortada's influential historical works related to the ICT sector's evolution (1996) would have included more accounts of women actors had there been more of them represented as the sector evolved.

Over the past few decades there has been a growing body of research related to the under representation of women in the ICT sector. While the phenomenon is well documented, there have been only a few accounts of individual executives who successfully climbed the corporate ladder. Little is known about the career progression of individuals in the ICT sector (Moody et al., 2003) and no studies have been found that specifically consider the career experiences of Canadian ICT executive women and men. This study builds on the body of knowledge related to the under representation of women in the ICT sector by exploring the career experiences of Canadian executive men and women to understand the barriers and enablers to advancement that they lived and how their experiences might inform initiatives to increase the representation of women in the Canadian ICT sector.

1.2 Statement of the Problem and Study Purpose

There have been pockets of visible success of women advancing to senior positions in the ICT sector on a global level. For example, CxO's of Facebook, Yahoo, HP, Xerox, and IBM were all women in 2015. Despite these breakthroughs there is a significant call for action in response to the ongoing under representation of women in the ICT sector. Research has found that year-over-year progress of women advancing into senior officer positions at Canadian Fortune 500 companies has been very slow with more than 30% of companies having no women senior officers (Catalyst, 2013). In 2016 women held only 5.4% of CEO positions at Canadian S&P 500 companies (Catalyst, 2017). Women accounted for only 16% of technology sector managers in a 2017 survey of large Canadian companies (Ng & Sears).

In 2014, Canadian regulations were enacted by the Ontario Securities Commission requiring publicly traded companies to report on the number of women on Boards and to set targets for Board membership (Ontario Securities Commission, 2014). This Canadian regulatory change follows similar action undertaken in other countries around the world (Sojo, Wood, Wood, & Wheeler, 2016). As further evidence of the problem and the call for action in Canada, the Information Communications Technology Council of Canada in association with the Status of Women Canada initiated a three year project in 2013 to help businesses advance more women in the ICT sector. There is a large and growing focus on the under representation of women, particularly in the Canadian ICT sector, yet no research was found that explored the career experiences of Canadian ICT executives. So, it follows that any future efforts to understand and address the under representation problem may not take into account country-specific and regional differences. The present research seeks to shed light on the career experiences of Canadian ICT leaders in order to inform the ongoing discussion about the under representation of women at senior levels in the Canadian ICT sector and the ongoing pursuit of initiatives that might increase ICT sector gender parity.

1.3 Research Questions and Study Significance

The primary research question is as follows: How might patterns in the career experiences of ICT executive men and women across Canada inform initiatives to increase the representation of women in the Canadian ICT sector, particularly at senior levels?

The specific study questions include:

- How do ICT executive men and women across Canada describe their career outcomes?
- How do ICT executive men and women across Canada describe barriers and enablers to their career advancement?
- What are the ICT executive career experience patterns across gender and across regions of Canada (outcomes, barriers, enablers)?
- What initiatives might increase the representation of women in the Canadian ICT sector, particularly at senior levels?

Despite a growing need for more ICT workers and leaders in the ICT sector, and acknowledged gender gaps across the sector overall and at senior management levels, there is no evidence of research that explores the career progression of senior ICT leaders in Canada. For many years now there has been a loud cry for action to address the ICT gender gap in Canada (Shortt & O'Neil, 2009) and yet, the stories of individuals who have emerged as sector leaders have not been examined. The opportunity to learn from the career experiences of Canadian ICT executive leaders seems to have been missed. This study seeks to fill the gap by providing a Canadian perspective to the ICT gender inequity discourse. Thus, the study is significant in its unique geographic focus.

The study is also significant in that it applies a unique approach. There is more research that explores the barriers to career advancement for women in comparison to research that explores enablers (Bowles, 2012). Few studies were found that compared career stories from samples of men and women and none did so in an ICT context. Also of note, most of the related studies that explored women's workplace experiences seemed to be authored by women. Determining gender from an author's name is problematic. For example, attributing gender for

the author of the present study could be done incorrectly since the first name Jules could easily be classified incorrectly as female. Notwithstanding the potential for such misclassifications, a cursory review of related literature including research cited in the present study suggests a majority of authors exploring the under representation of women in ICT are female. Thus, this research is arguably further enhanced by the perspective of the author – a male – which seems to be unique relative to other related studies.

Of most significance, this study's contribution lies in its unique perspective and approach in that it considers a long-standing question about the under representation of women in the ICT sector, for the first time, with a Canadian qualitative lens that reflects on the experiences of both men and women.

1.4 Structure of the Dissertation

The dissertation consists of six chapters beginning with the present introduction followed by a broad literature review consistent with the interdisciplinary nature of the research. The third chapter describes the methodology including the case study research design as well as research validation strategies applied in the study. Chapter four describes the cases and associated rationale for their selection. Chapter five includes the results with some limited analysis, as well a model of barriers, enablers, and career advancement that emerged from the data and are central to the dissertation. This chapter is presented in three sections covering the early, mid, and mature career stages of participants with results presented in chronological sequence. Chapter five also contains some preliminary discussion of the results thus it is quite lengthy. Chapter six provides an integrative discussion of the results including their implications for individuals and organizations following the sequence of the four research questions. Strengths and limitations of the research, as well as a summary and overall conclusion, constitute the balance of the final chapter.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

This literature review provides context for the interdisciplinary dissertation covering a broad range of topics related to gender, careers, management, computer science, and the ICT sector. The review is structured as follows: women in the workplace and the ICT sector, the benefits of diversity and gender equity, the intensifying discussion about women in ICT, career theory and career development models, notions of career success, the changing nature of careers, how careers are unique and sensitive to cultural context, theories of gender and ICT, barriers and enablers to career advancement, and human resource management strategies.

In the early 1900s, women represented less than 20% of the United States (US) workforce. By 1945, the representation of women in the workplace grew significantly to more than 50%. This was largely due to increased demand for women to fill jobs that were previously held by men during World War II. By 1960, this number had declined to about 35% (Hill, 2013). Women in the Canadian workforce experienced a similar growth and decline. More recently the representation of women in the Canadian workplace is near parity with men. However, the balance tips towards men as one moves up the corporate ladder to positions of higher scope, authority, and compensation according to the Catalyst (2014) Pyramid. Women occupy 5.3% of the most senior positions in Canadian business as either Chief Executives or Heads of organizations. Boards of Directors in Canada are 11.6% comprised of women (World Economic Forum, 2016) with 18.1% of senior officers being women and 35.7% of management occupations being filled by women (Catalyst, 2014a) The gap between men and women in senior positions is large in many countries with women occupying on average only 12% of board seats in publicly traded companies globally, the United States, Australia, and in Canada (World Economic Forum, 2016).

As an emerging sector, the definition of the ICT sector has changed over the years. For the purposes of this research, the definition of the ICT sector used by the Information Communications Technology Council of Canada will apply. This

includes the National Occupations Classification codes contained in the Chapter 4 of this dissertation (see Table 9). The representation of women relative to men in ICT-related jobs in Canada is 23% (Statistics Canada, 2011a). Available data that compares national workforce demographics indicate that the representation of women in ICT in Canada is lower than in Europe (European Commission, 2012) but consistent with the United States (Catalyst, 2014b).

As the transition to a knowledge-based economy continues around the world, regions with a technology savvy workforce enjoy stronger economic development. Trauth, Quesenberry, Huang, & McKnight (2008) acknowledged the availability of human capital as one of the driving forces for economic development. Governments around the world are developing policy that acknowledges this perspective. Canada aims to be a leader in adopting and using new technological advancements and development of growth sectors, such as ICT, are strategic for provincial governments (Industry Canada, 2014). It follows then that women, who are an under-represented group in the ICT sector, are a largely untapped source of talent for the knowledge economy and their increased participation in the ICT sector would benefit the economic development efforts of governments (ICTC, 2016a; Trauth et al., 2008). The benefit of increased workplace diversity is also strong when diversity is defined more broadly. Diversity in the workplace refers to more than gender and generally includes differences in race, ethnicity, disability, sexual orientation, and culture (Barak, 1999). It can also include characteristics like education, tenure, or marital status. There is a large and growing body of research on workplace diversity that identifies and supports its associated benefits (Anne, 1998; Scott, Heathcote, & Gruman, 2011; Stevens, Plaut, & Sanchez-Burks, 2008).

Increased representation correlates with improved business performance (Catalyst, 2004; McKinsey Consulting, 2011). Over the past few years, the movement towards more diverse workplaces has been driven by a growing business case that highlights how organizational performance is enhanced through actions that promote workplace diversity. Studies (Bruckmuller, Ryan, & Haslam, 2014; Richard & Johnson, 2001; Scott et al., 2011; Spiers, 2008; Martin-

Alcazar, Romero-Fernandez, & Sanchez-Gardey, 2011) have shown improvement in bottom line financial results, decision quality, employee morale, customer satisfaction, and a range of other business measures that improve with increased diversity. Although this position is increasingly accepted, it is challenged by an alternative view that espouses a social justice motive for diversity. At the core, this social justice argument challenges the contingent nature of the business case for diversity as a “fair weather” approach (Noon, 2007, p. 778) with a variable effect, depending on the business climate, and thus failing to address the core ongoing social issue of fairness and equity. The market economy in this context is not reliable in adequately and appropriately influencing under-represented groups, such as women. Other elements of the social justice diversity argument include how the business case for diversity is difficult to measure and how organizations are often very short-term focused (Noon, 2007). Notwithstanding, there is considerable momentum for the business case argument that is espoused by advocacy groups, including global women’s advocacy organizations such as Catalyst, as well as federal and provincial governments (Preville, 2014).

Governments around the world are exploring policy alternatives to increase the representation of women in leadership positions (Klettner, Clarke, & Boersma, 2016). Strategies including targets, quotas, and reporting are being introduced as governments press for greater gender equity and the presumed associated economic and social benefits. In Canada, as of 2014, publicly traded companies are required to set targets for women membership on boards and report progress towards these goals in annual regulatory reporting (Ontario Securities Commission, 2014).

The Association of Computing Machinery (ACM) is a prominent computing society and has hosted meetings and conferences related to human resource management for IT professionals since the first ACM Special Interest Group (SIG) for Computing Personnel Research (CPR) was held in 1962. It is reasonable to use the topics discussed at ACM as an indication of prevailing issues for the IT community and a broad survey of the CPR topics discussed over the years provides some insight into the evolution of human resource management as it

relates to the discipline of computer science. In a survey of ACM CPR SIG discussions, Niederman and Krasteva (2012) found that workforce diversity has emerged as a major topic. Although not on the CPR radar until recently, workforce diversity including gender equity is now a hot topic. In each of the five years from 2007 to 2011 diversity and the cultural issues of the IT workforce were discussed. The only other topics discussed in each of those five years were the areas of careers, workforce education, and recruitment and retention. It is significant to note that while these other discussion topics were on the ACM CPR SIG agenda in the early years, between 1962 and 1969, the issue of workforce diversity was not.

It is clear that diversity is of interest to the IT sector as further evidenced by the existence of local ACM Women's (ACM-W) Chapters and the preponderance of societies and committees dedicated to encouraging and supporting women in science and technology. Across Canada many such organizations have emerged including Canadian Women in Technology (CanWIT), Women in Communications and Technology (WCT), Canadian Coalition of Women in Engineering Science Trades and Technology (CCWESTT), Society for Canadian Women in Science and Technology (SCWIST), Canadian Centre for Women in Science Engineering Trades and technology (WinSETT), Women in Science and Engineering (WISE), the Hypatia Association, and The ACM Canadian Celebration of Women in Computing. Computer Science related programs at universities across Canada are supporting women as will be described in Chapter 4. Combining the ACM CPR agenda topics, the plethora of special interest groups, and the current wave of interest stemming from Facebook COO Sheryl Sandberg's movement targeted at women in technology including her best-selling book *Lean In*, (2013), it would seem there is intense interest in addressing the ICT gender gap. Greater understanding of career theory and how the careers of individuals are considered to evolve will provide a foundation for the study as follows.

2.2 Theoretical Frameworks

In seeking to understand patterns in the career experiences of men and women ICT executives, a range of theoretical frameworks were reviewed. The

methodology, explained in Chapter 3, will describe how these were not considered *a priori*, rather they were mostly considered in relation to the data collection and analysis as the study progressed. Career theory including career development models were reviewed from seminal works of scholars, including Levinson, Schein, and Super. More contemporary theory, including from Sullivan and Dries, as well as theory specific to gender and IT were also explored, namely from Trauth. The following review makes significant reference to these scholars and others.

2.2.1 Career Theory

Career Theory has been described as the study of people at work. It considers both individuals and institutions in emergent and relative contexts (Arthur, Hall, & Lawrence, 1989). A range of theoretical frameworks have been applied to the development of career theory; as social science orthodoxy, seeking quantifiable relationships between variables; as social science reform, exploring careers in relation to the environment; as functionalism, seeking to understand patterns and improve systems; and as criticism, challenging prevailing views about people and work (Arthur et al., 1989).

Researchers at the University of Chicago, with their early focus on sociology, were pioneers in the study of life histories and arguably introduced the first scholarly reference to "career" in the late 1920s (Hughes, 1928). Initial notions considered "careers" as,

> A series of statuses and clearly defined offices…the moving perspectives in which a person sees his life as a whole and interprets the meaning of his various attributes, actions, and things that happen to him. (Hughes, 1937, p. 413)

In the late 1960s and early '70s, careers were typically framed in hierarchical terms and notions of vertical career progression became commonplace. Studies explored promotions and demotions and concepts of climbing ladders, and plateauing emerged supported by "vertical classification" schemes (Schwartz, 1981). Faulkner (2003) challenged the vertical career notion and its objective perspective with a more subjective perspective where careers were considered in terms of how individuals interpreted their careers and the meanings that they

attributed to them. Thus, the duality of careers emerged whereby a range of objective and subjective measures were used to understand careers.

Before the industrial revolution careers were typically inherited within a family and the measure of career success was related mostly to physical survival and security. In post-industrial society, large bureaucratic organizations began to emerge thus offering more career choice and prestige became a common measure of career success (Dries, 2011). Research about career success has included measures such as the number and rate of promotions, earnings or salary increases (Lyness and Thompson, 2000), span of control, hierarchical level or rank (Tharenou, 2001), perceived importance of job outcomes (Gianakos, 1999), and compensation, as well as subjective measures like job satisfaction and career satisfaction (Judge, Cable, Boudreau, & Bretz, 1995). Objective and subjective career success measures are interdependent and studies have explored relationships between the two from many dimensions, including Arthur, Khapova, and Wilderom (2005), who concluded that more research is required to understand the two-way interdependence of objective and subjective career measures especially in light of what they describe as an unfolding “dynamic and uncertain world.”

Subjective career success outcomes, including career satisfaction, happiness, emotional wellbeing, physical health, and work engagement were explored in relation to perceptions of the “glass ceiling” phenomenon where woman are generally understood to be limited in their ability to access higher level positions wherein Smith (2012) concluded that women’s denial of the glass ceiling had the strongest relationship with their subjective career success measures. In an analysis of career success literature, relevant to the present study’s qualitative approach, Arthur et al. (2005) lament a lack of research that involved “listening directly to the research subjects or even allowing them to elaborate on their own criteria for career success” (p. 196). This call for more qualitative research acknowledges the value of objective measures while suggesting that the individual’s own perception of their career may have the strongest impact on their

behaviour and thus subjective measures need to be better understood in order to advance career theory.

Career Theory and its evolution has been strongly influenced by the study of adult development. Scholars like Levinson and Super have made important contributions to the conceptualization of careers, such as advancing notions of career development models that postulate career phases in relation to adult life development phases (Levinson, Darrow, Klein, Levinson, & McKee, 1978; Levinson & Levinson, 1996; Super, 1980; Super & Hall, 1978). There has been some debate among scholars about the generalizability of adult development theory and career development theory to both men and women (Cytrynbaum & Crites, 1989). Levinson's works considered the lives and careers of both men and women, exploring the relationship between one's life structure and one's career arguing that they are effectively one macrostructure (1984). He established time bounded periods of the life structure, including: pre-adulthood (From birth to age 22), early adulthood (ages 17 to 45), middle adulthood (ages 45 to 65), late adulthood (ages 60 to 80), and late-late adulthood (aged 80 or older). In Levinson's view (1984), the life structure was the vehicle through which one would realize an understanding of one's self in the future, which he called "the dream." Levinson also emphasized the process of mentoring and its importance on career evolution. Levinson's macrostructure is based on theories of adult development and is thus individually focused.

Other scholars advancing individually focused life span models of career development include Miller and Form (1951), as well as Donald Super (1957), whose focus was vocational counselling. Super advocated a five stage career development model including: the growth stage, the exploratory stage, the establishment stage, the maintenance stage, and the decline stage. A common element among the contributions of these scholars was the application of an individual biological life span model (Cytrynbaum & Crites, 1989, p. 66). The evolution of a career over one's lifetime and the integration of work and other aspects of one's life have been described by Super (1980) as a Life-Career Rainbow to illustrate the various roles played, often simultaneously, at any given

stage. The range of roles played in his model include: child, student, leisurite and recreationalist, citizen, worker, parent, spouse, and homemaker. All of these roles combine at any given time to constitute a “lifestyle” and when analyzed in sequential combination constitute a “life cycle” depicted in Figure 2 below.

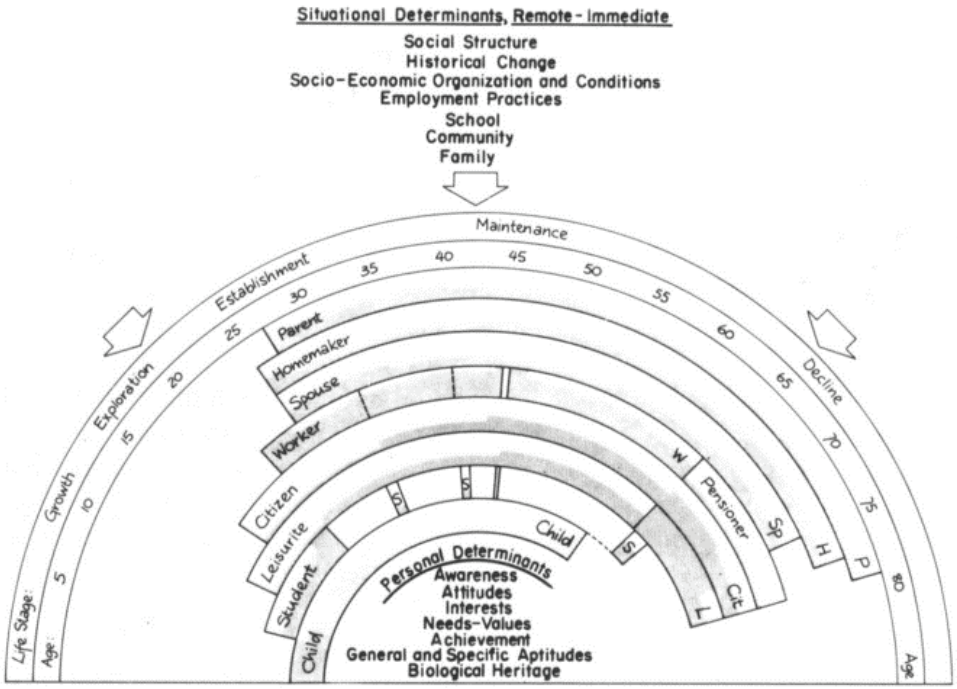


Figure 2. The Life-Career Rainbow Model. Reprinted from “A Life-Span, Life-Space Approach to Career Development.” Donald Super, 1980, Journal of Vocational Behaviour, 16, 3, p. 289. Copyright © 1980 Published by Elsevier Inc. Reprinted with permission.

Super (1990) later also illustrated the integration of the individual and society in the context of a career depicted as an archway of career determinates including aptitudes, interests, values, family, economy, and other environmental factors

Alternative and complementary career development models take the influence of the organization into greater account and are thus less individually focused. Becker and Strauss (1956) considered the interdependence of careers and how individuals in organizations influenced each other’s careers. Organizationally based models of career development consider the individual within a structure and the relationship between them. This reciprocal relationship was central to the renowned scholar Edgar Schein, who introduced a three-dimensional model of the organization (1971) in order to illustrate how individuals

move within organizations including: vertical movement along the traditional hierarchical path, the radial dimension accounting for how individuals may become more “central” to and “inside” the organization, and the circumferential dimension, describing movement across the many functions of an organization. Where Levinson and Super’s career development models were more individual life span oriented, Becker and Strauss (1956), and Schein (1971) advanced notions of career development as being about the organization, the individual, and their relationship.

One additional career development theory applies a career stages model of careers that are not based on individual life span. Dalton, Thompson, and Price (1977) studied professional Scientists and Engineers in order to understand the relationship between age and performance ratings and later to understand why professionals were valued by the organization. One of their contributions was the development of a four-stage career model that sets out characteristics of work performed at each stage. Their model accounts for increasing breadth of responsibility, scope and scale of results, development of others within the organization, relationships with others outside the organization, formal and informal power, and sponsorship of others in order to prepare them for development. Their research uncovered individuals performing at these career stages independent of chronological age thus challenging the life stage models. Some individuals in highly technical roles were found to be at the fourth stage of the model even when they were not in a managerial or supervisory capacity. Their work challenged the early vertical notions of career and the life span career development models laying the groundwork for the evolution of career theory over the past several decades.

The idea of what constitutes a career has changed considerably in the past fifty years. Many factors shape personal and social perceptions of careers including history, culture, and ideology (Dries, 2011). Early careers theories described them as processes that tie the individual and the organization together (Schein, 1971) and careers have since then been described as more ‘protean’ in that they are a reflection of the individual more so than the organization (Super,

1980). A more contemporary definition is offered by Dries (2011) where she describes a career as “a series of more or less unpredictable experiences lived by individuals continually negotiating work and non-work aspects of their lives.” (p. 365). Today, careers are generally viewed as either traditional linear or the newer boundaryless career (Joseph, Boh, Ang, & Slaughter, 2012). Sullivan (1999) summarized the differences between these two career perspectives highlighting how the individual takes responsibility for career management in a boundaryless model whereas in a traditional linear model, the organization was assumed to be responsible for career management. According to Sullivan, in a boundaryless career, skills are transferable where traditionally they are firm-specific and the employment relationship is much less based on job security in exchange for loyalty as they are in a traditional model. Boundaryless careers are also contrasted with traditional careers in that they are less tournament-like wherein advancement involves winning a competition and they are more consistent with understanding a career as a series of experiments (Sonnenfeld, 1989). The Kaleidoscope career model is another contemporary framework that challenges the traditional linear career and portrays how a career is unique for each individual whereby even the slightest twist may result in a substantially different career pattern (Sullivan & Mainiero, 2008). It would seem that as careers have changed, they have become less predictable (Arthur et al., 2005).

One area of scholarly attention is the influence of changing social values across cultures and perceptions of career success around the world. It is generally accepted that careers have an internal and an external dimension. The external dimension relates to the career as perceived by others where the internal dimension relates to notions of self. It is evident from the volume of literature available that the external dimension gets the most attention (Ituma, 2006); although increasingly research is focusing on the internal dimension. Post-industrial society has experienced changing notions of career success that have coincided with, and may be influenced by, a transition in values to a post-materialist view. An increased focus on self-expression values, subjective well-being, self-expression, and individual spirituality has emerged (Dries, 2011).

These values differ across cultures but the transition to a post materialist view has been most evident in affluent societies, such as North American. This transition has challenged ideology, such as “the American dream” and its influence on notions of success.

Schein’s conceptual schema for careers seems to account for both the traditional and the newer career, as well as the internal and external dimensions. He suggests that a career can be described from three perspectives namely that of the individual, the organization, and the outside observer or that of society (Schein, 1971). Schein’s often cited, career anchor model focuses on the internal dimension of career and defines career anchor as, “that one element in our self-concept that we will not give up, even when forced to make a difficult decision” (1987, p. 158). These anchors are said to influence individual career decisions. Schein’s original model was updated to account for emerging social values including notions of service or dedication to a cause, pure challenge, and life style (Schein, 1990). Scholars have argued that Schein’s model, although updated, cannot account for individuals who have multiple careers (Ituma, 2006) and moreover, that individuals may have more than one career anchor. This is in line with the work of Ginzberg and Baroudi (1992) who observed a dual career strategy among Information Technology (IT) workers. The nuances of a career in IT is the focus of the following discussion.

The literature on the IT workforce typically treats them as a homogeneous group. Von Glinow (1988) indicated that high tech workers are unique with attitudes and values different from other workers. Her description focused on their technical training and strong professional identity as contributors to their uniqueness. IT workers have also been thought of as unique based on their relatively high levels of compensation (Colclough & Tolbert II, 1992). They tend to place high value on autonomy (Von Glinow, 1988). Typical IT personnel stereotypes include the high maintenance workers who place significant demands on the employer including pay, older static IT professionals who are stuck in an original technology skillset and unwilling to develop new skills, and technology anchored geeks who define themselves in terms of technology and are not people

oriented. While some studies reflect on the unique nature of the typical IT worker, others serve to highlight regional differences (Lee, 2002).

A wide range of IT worker and IT career-related studies have been undertaken in countries including the United States, Taiwan, South Africa, China, the United Kingdom, Australia, and Canada. A common feature of these studies is that they are regionally situated and are sensitive to regional cultures. One example is Aaltio and Huang (2007) who explored the career experiences of women “high flyers” in China’s IT sector and highligted how western societies favour a more balanced approach to work and family thus potentially making it easier for women to actively participate in the workplace compared to China with its more traditional values where women play a stronger role in family matters.

Ginzberg and Baroudi (1992) observed differences in career anchors in a quantitative study involving information systems (IS) personnel from across the United States (US) and parts of Canada. Their findings suggest that career anchors are similar across IS workers but they noted an exception relative to the Canadian participants who reported a lower score for the job security anchor. This suggests that it is less important for them than other career anchors that were more important for participants from other countries. Although this finding is potentially attributable to differences in social security policies across the two countries, it serves to underline the need for career-related research to consider the local context. This conclusion is consistent with Hanappi-Egger (2012) who examined diversity management and recommended that future research focus on understanding the local culture or “habitus.” Other themes in IT personnel and IT career literature include the strategic importance of the IT workforce to economic development, shortages of IT workers, employee retention, diversity, and in particular, under representation of women.

2.2.2 Gender and IT Theory

From recent research, a new foundational theory of gender in IT has emerged as an alternative to two prevailing theories often used to explain gender differences. Essentialism and Social Constructionism have long been offered as

the theoretical bases for gender-related research. The “nature” and “nurture” perspectives are typically seen as opposing points of view as will be described. There is a growing body of literature supporting the “individual difference theory of gender and IT” as a theoretical framework that focuses on how individual factors influence people in a specific context rather than societal factors or forces of nature. What follows is a description of these alternative frameworks and an introduction as to why the Individual Differences Theory of Gender and IT is favoured in this study.

Essentialist theory argues that men and women are fundamentally different based on forces of nature including physical or cognitive abilities and that these differences are fixed. Early feminist research was dismissive of this perspective as it was considered to be highly patriarchal (Wajcman, 1991, p. 449). Differences in tastes and preferences are also considered to be an element of essentialist thinking that may account for broad generalizations and stereotypes such as, for example, “girls don’t like math.” Research suggests that women are more social, expressive, and nurturing where men are stronger, more analytical, and better leaders (Levanon & Grusky, 2016). Occupations that are dominated by women are typically seen to require these skills and attributes and this is argued to lead to a more segregated workplace and as a result, essentialism is postulated to perpetuate the under representation of women in many contexts (Keller, 2005).

Social Constructivist theory takes a more flexible perspective and argues that essentialist fixed differences are simplistic. Research that looked at how gender is manifest in different cultures gave rise to the notion that it is constructed rather than given and thus it can be deconstructed and reconstructed. A good example of the application of social constructivist thinking can be drawn from a UK case study of a social program to change the perceptions of young girls towards technology. The image of technology and the way it was experienced by girls was influenced through a campaign making ICT more “glamorous” and diverse. Although the results were not measurable, the program was seen to have been successful in the way it was applied and how it was seen to break old segregated stereotypes and establish new, more inclusive ones. This social constructivist

perspective led to an approach that was less fixed than the essentialist view and attempted to change both individuals and their social context. A description of scholarly social constructivist arguments, including those of many feminist thinkers and gender theorists, is offered by Van den Berg (2011) as follows:

> The central tenet of social constructivism, as exemplified by these studies, is that gender, sexuality, male and female are cultural constructions, not given aspects of human existence. Based on this perspective, social constructivists argue that persons are sexed and gendered according to social and cultural processes, rather than biological givenness. (p. 388)

Her research challenged both social constructivist and essentialist theories as similarly being premised on a "men versus women" viewpoint and that they were lacking in their consideration of gender ambiguity. Her work extends beyond minority transgendered people to include majority straight people and encourages a more open ontology to gender theory. Although not workplace oriented, her research sets the stage for an alternative theoretical perspective that focuses more on individual differences.

Research often seeks to be generalizable and strives to account for differences and similarities among groups including those that might defined by gender. Through a series of studies, Trauth (2002, 2006; Trauth, Quesenberry, & Morgan, 2004) developed the Individual Differences Theory of Gender and IT that rejects essentialist thinking and offers an incremental perspective to that of social constructivists by being more sensitive to individual influences. Quesenberry and Trauth (2012) consider three general constructs in their research related to gender and IT as follows:

> The individual identity construct includes both personal demographic items (such as age, race, ethnicity, nationality, socio-economic class, and parenting status) and professional items (e.g., industry, type of IT work, etc.). The individual influence construct includes personal characteristics (e.g., educational background, personality traits, and abilities) and personal influences (e.g., mentors, role models, experiences with computing, and other significant life experiences). The environmental influence construct includes cultural attitudes and values (e.g., attitudes about IT, about women in IT), geographic data (e.g., about location of one's work) and economic and policy data (e.g., about the region/ country in which one works). (p. 462)

Trauth's research and her theoretical perspective has been referenced frequently and applied in a variety of studies although the present study literature review suggests it has not been applied in a Canadian setting. Individual difference is not new as an overall research perspective; however, it is relatively new in a gender and IT research context. At its core, the idea of challenging and extending prevailing gender research perspectives of essentialism and social constructivism is at the very least refreshing and of interest to the present study author. The study methodology was influenced by this perspective, not from the outset, but as the data set grew, the Individual Differences Theory of Gender and IT provided valuable methodology insight as will be described in the Chapter 3.

2.3 Barriers and Enablers to Advancement for Women

What follows is a brief description of some broad theories related to the under representation of women in leadership as context for a survey of literature that explore barriers and enablers to career advancement for women. The notion of the "glass ceiling" is described along with institutional theories such as the "chilly climate," the "Queen Bee," and the "old boys network," as well as a reference to inequitable compensation as a barrier. Some common self and social barriers that relate to gender workplace stereotypes including the "double bind" are also explored. Of particular interest is the subsequent inventory of studies identifying more specific factors contributing to career advancement that were considered during data analysis, as will be described in the Chapter 6. An inventory of career advancement influences is summarized in Table 1 (see p. 30).

The "glass ceiling" phenomenon refers to career advancement barriers for women and people of color (Baxter & Wright, 2000; Morrison & Von Glinow, 1990; Morrison, White, & Von Velsor, 1987). The metaphor illustrates how women, or other under-represented groups, are able to look up and see career opportunities but are somehow unable to realize them because of an invisible barrier. The term first appeared in an article by Hymowitz and Schellhardt (1986) and has since been commonly used in many contexts, including business, government, and academia.

A significant volume of literature related to glass ceiling effects has emerged since the US Federal Government Glass Ceiling Commission (Jackson & O'Callaghan, 2009) that described three types of barriers faced by women and people of color in top level management. The barriers explored by the Commission included societal barriers, referring to the availability and number of qualified individuals from under represented populations; internal structural barriers, referring to the lack of businesses programs involving outreach and development, as well as non-inclusive corporate climates; and government barriers, referring to a lack of monitoring and enforcement (Jackson & O'Callaghan, 2009). The existence of a glass ceiling has been challenged and analyzed across nations including a quantitative study (Baxter & Wright, 2000) that distinguishes between a gender authority gap and the mathematical probability of woman being promoted compared to men. The authors suggest that a statistically significant glass ceiling does not exist in the United States but does exist in Sweden and Australia. They argue that socio political considerations and varying degrees of government focus on antidiscrimination practices may be factors influencing the glass ceiling in these countries.

Two broad categories of management theory can be used to explain the glass ceiling barrier, namely institutional theories and social theories (Frankforter, 1996). Institutional theories focus on rules, policies, and organizational structures where the status quo maintains the power and dominance of white males. Social theories focus on cultural biases and gendered definitions of leadership that are masculine and require under-represented groups, such as women in ICT, to model these gendered characteristics in order to advance. Tripp-Knowles (1995) proposes a framework to understand the barriers and obstacles facing women in science addressing systems barriers, institutional barriers, interpersonal barriers, and self-barriers. She defends the notion that a cumulative disadvantage exists for women in science based on life experiences and the career obstacles that are encountered by them throughout their career beginning with early education. Since ICT is generally considered to be in the domain of science, Tripp-Knowles' work should align with ICT career experiences. Her work is science-focused but the

cumulative disadvantage is argued more broadly by others including Carter and Silva (2010). The following are common research phenomenon considered to be associated with the glass ceiling.

The notion of a “chilly climate” experienced by women in science academia and business is acknowledged and explored by several authors (McCord, 2000; Morrison & Von Glinow, 1990; Roldan, 2004; Soe & Yakura, 2008; Tripp-Knowlls, 1995). The chilly climate is characterized as an institutional barrier in Tripp-Knowles’ framework and is described as unwelcoming cues that girls and women receive that can lead to a lack of confidence, thus discouraging entry or advancement in science.

The concept of a social network has been linked to the commonly held belief that “it’s not what you know, it’s who you know.” This idea was initially explored in the 1950s and has since grown as a research topic and been examined from many perspectives, including how social networks impact access to information, giving and receiving support and advice, and power (Cabrera & Thomas-Hunt, 2007). Gender research has focused on the impacts of social networks, including the “good old boys club.” This is a commonly used term that describes a closed social network that is exclusively accessed by men and where interaction determines power, status, money, and influence. Much of the literature surveyed identified the “good old boys club” as a barrier to advancement for women in the workplace (Glass & Cook, 2016; Lyness & Thompson, 2000; Lyons, Mcarthur, & Devries, 2007; Nelson-Porter, 2004; Vinnicombe & Singh, 2011; Wilson, 2001). These male oriented networks may have provided a source of mentorship relationships for men but typically not for women.

Workplace mentoring is a process whereby a protégé and a mentor establish a relationship with the intention of developing the protégé’s career (Adya & Cotton, 2012). Together with a higher form of support described as “sponsoring,” these two levels of support are often seen as vehicles to help advance the careers of women who are disadvantaged by forces such as the old boys network (Ibarra, Carter, & Silva, 2010). Differences in men’s and women’s social networks, including mentorship and sponsorship have been studied with an eye to minimizing

the glass ceiling effect and advancing more women. Although men and women participate in such mentorship and sponsorship programs, the idea that organizations should try to increase the number of women in senior management is twice as likely to be held by women executives compared to men (Vachon & Lavis, 2013). However, Vial, Brescoll, and Napier (2016) contend that a perceived illegitimacy of women in leadership creates a “backlash” against them as status and power attributes are associated more with men and thus, women are unfairly discriminated against in leadership roles, particularly by those with “conservative” values. Moreover, Vial et al. argue that when women leaders uphold traditional values about women in leadership roles they are less likely to be seen as a threat, and more likely to be ascribed legitimate power. Women who are gender blind, or whose attitudes towards gender in the workplace are more like men, and who forgo the opportunity to help other women in the workplace, are sometimes referred to as “Queen Bees”

> ‘Queen Bees’—women in senior roles who deny the existence of gender bias—seem overly represented among women who have managed to make it to the top in male-dominated fields. (Vial et al., 2016, p. 410)

A self-fulfilling cycle would seem to exist where in order for senior women to assume powerful positions in male dominated organizations they sometimes need to behave in ways that minimize their ability to advance other women. Thus, the development of “an old girls network” to challenge or counteract longstanding male dominated social network structures would be unlikely to emerge. However, in a longitudinal study of managers (Dinolfo, Silva, & Carter, 2012) found that managers who develop the carers of others are more likely to advance their own careers. They argue that women are more likely than men to "pay it forward" and that women are more likely to develop other women, where men are more likely to develop other men. This study contradicts the body of literature advancing the "Queen Bee" syndrome that suggests women in senior positions do not help other women to get ahead.

Another example of a systemic barrier would include compensation gaps between men and women where women are paid less than men for comparable

work and skill (Carter & Silva, 2010; Jackson & O'Callaghan, 2009). Despite progress in recognizing and addressing the pay equity gap, there remains a strong feminist movement arguing a need for renewed efforts to diminish it (Tharenou, 2012). Inequitable compensation can be considered a barrier to career advancement in that it can be interpreted by women as tangible evidence of a gender bias and could lead to decisions where they "opt out" of executive roles and pursue careers that pay less and involve less responsibility (Williams, Manvell, & Bornstein, 2006). While scholars generally acknowledge the existence of pay gaps, they are less consistent in their understanding of their causes. Some scholars consider pay gaps to be attributable to labour market discrimination where others look more to differences such as human capital including skills, knowledge, and educations as the gap source (Weinberger, 2011). Regardless of the source, efforts to be more accountable and transparent about pay systems and pay equity in organizations are considered a possible solution to closing the pay equity gap (Castilla, 2015).

Managing family responsibilities was the principle barrier to career advancement reported by women as evidence of discrimination in a quantitative study of barriers facing women in the IT work force (Riemenschneider, Armstrong, Allen, & Reid, 2006). Work family balance has been explored in a range of studies including research about women's levels of ambition (Fels, 2004), women's decisions to take parental leave (Allen & Russell, 1999), stereotypes of working mothers (Cuddy, Fiske, & Glick, 2004), and women's success in international work assignments (Linehan & Walsh, 2000). A common theme across all of these studies is how women are generally expected to assume a greater level of household responsibilities compared to men regardless of how many hours they work outside the home. A content analysis study of North American print media paints a story that women are pushed out of the workforce more often than what some research suggests is an opt out decision. Williams et al. (2006) suggest that women face workplace gender discrimination in that they are expected to care for their families and men are not. They argue that women are driven out of the

workforce by a motherhood bias that is reinforced by a lack of government support for working families in the United States.

Research suggests women tend to be less competitive than men (Cuddy et al., 2004; Joshi & Kuhn, 2005; Natural Sciences and Engineering Research Council of Canada, 2010). Differences in women's value systems and their predisposition to collaboration and relationships (Eagly & Karau, 2002; Latrese Page, 2005; Sumner & Werner, 2001), as well as women's self-perceptions that they lack assertiveness (Fels, 2004) are additional examples of self-barriers. Similarly, research has shown that women underestimate their abilities while men overestimate theirs. For example, men were found to apply for a promotion when they met half of the job qualifications whereas women only applied when they met all the qualifications (Kay & Shipman, 2014). The masculinity of leadership roles where people generally associate notions of leadership with male terms (Eagly & Karau, 2002) is often combined with the idea that women over compensate for this disadvantage finding themselves in a "double bind" because in acting like a man they appear arrogant or abrasive where failing to do so makes them appear weak or overly emotional (Ibarra, Ely, & Kolb, 2013).

The glass ceiling exists, however, there is no clear understanding of factors that perpetuate it and influence the lack of gender parity in the ICT sector. Accordingly, for the purposes of the present research, a review of literature covering a broad range of career advancement barriers and enablers in the workplace is offered to establish context for the research findings.

2.3.1 Survey of Career Advancement Influences

What follows is a survey of studies exploring various factors that contribute to career advancement, followed by an inventory of studies and a summary of the factors they considered, which will be referenced throughout this dissertation. The survey is subsequently summarized in Table 1 (see page 30). Of interest are the wide range of factors explored in research related to career advancement that will be used to develop data analysis frameworks in the present study.

Tharenou, Latimer, and Conroy (1994) explored the factors that foster managerial advancement in an empirical study and concluded that gender influenced the availability of career resources and power in a way that disadvantaged women. They were the first to use modelling to understand the influences on career advancement comparing men and women in areas of training, education, work experience, and career support. Tharenou (1997) reviewed major theories explaining managerial career advancement and developed a model that proposed ambition, skills, and instrumentality as having a greater influence on advancement than promotion ladders. She also proposed that informal social networks and "who you know" are more influential than formal structures when it comes to advancement. Her work also explored the influence of human capital, performance, and personality traits. In this sense, Tharenou (1997) agreed with Kanter (1977, p. 48), who introduced the term "homosocial reproduction" to describe how being in a minority negatively influenced the advancement of women since men were more likely to promote other men rather than women.

In an American qualitative study, Mainiero (1994) interviewed 55 "high profile" women to explore key events in the early stages of their careers in order to understand how they advanced and what lessons they learned. Her study sought to understand how these women were "anointed" and identified five "hurdles" that they need to overcome including: getting assigned to a high visibility project, demonstrating critical skills for effective job performance, attracting top level support, displaying entrepreneurial initiative, and accurately identifying what the company values. Her essential conclusion was that women, like men, need to perform well and "stand up and be counted" (p. 62) in order get ahead. The research concluded that successfully jumping each of these five hurdles would ultimately lead to career success.

Kirkpatrick and Locke (1991) conducted an analysis of leadership traits that argued six traits are present in men and women leaders as follows: drive, including achievement, ambition, tenacity, and initiative, desire to lead, honesty and integrity, self-confidence, cognitive ability, and knowledge of the business. The study did not distinguish between men and women leaders. These traits were

considered as “the right stuff” for leadership and were described as not equally present in all people. Charisma, creativity, flexibility, problem solving, and fostering change were also identified as key leadership traits in the study but to a lesser degree and with less “clear cut” evidence than were the six traits.

A follow-up study of Australian middle managers explored the advancement of 20 participants from an earlier study about attitudes to promotion. Wood (2006) interviewed both men and women and identified factors that either hindered or contributed to their career advancement. The original study was quantitative involving a survey with 1,100 respondents whereas the follow-up study was qualitative consisting of interviews with 11 men and nine women from the original study (Wood, 2003). The longitudinal study concluded that more men had progressed more quickly than had women. Of particular interest to the present study, Wood identified career success characteristics that she equated with organisational progression, with only a small number of these characteristics being common to both men and women. Men reported a larger number of success factors than did women. Accounts of career success by men tended to relate to experience whereas those of women tended to relate to relationships. Although the study looked mostly at success factors there were references made to factors that hindered advancement. In general, Wood’s study suggested that men described barriers as external to them such as a lack of opportunity where women tended to describe barriers in relation to family or motherhood and how these factors adversely impacted how they were seen in the organization. In an earlier study, Kirchmeyer (1998) explored determinants of both career progression and perceived career progression showing differences among women and men. Both career progression and perceived career progression were determined more so by individual determinants for women than men, whereas for men stronger determinants were human capital such as experience and education.

Career advancement and family balance strategies of executive women were explored in a qualitative study that included 25 women participants (Ezzedeen & Ritchey, 2009) and included development of a model identifying factors that influence career advancement in a high level schema as follows: value

system, personal social support, and professional social support. These same categories were used to explore family balance strategies. A third element of the model describes life course strategies. A lower level of this schema identified more detailed factors across each of the model elements. The study added to the discourse on women in the workplace and their challenges in maintaining family balance. The study did not consider family balance strategies used by men. This study was co-authored by a researcher from a Canadian university and although no geographic scope for the research was offered, evidence from the data cited suggests that the participants were USA based. This consideration is relevant to the present study in that no studies were found that qualitatively explored the careers of Canadian executive women thus making the present study more unique.

Lyness and Thompson (2000) compared the careers of matched pairs of men and women executives and observed greater barriers for women than men. Lack of cultural fit and exclusion from social networks limited the advancement of women where breadth of experience and developmental assignments positively influenced advancement for both genders. Men who had advanced reported a greater influence of mentoring relationships than did women. Men had more international assignments than did women. The study claimed to be the first that compared barriers and enablers for both men and women and was unique in that it used a matched pairing methodology in a single international organization.

Sumner and Werner (2001) explored the career experiences of information systems professional men and women applying a framework that included: feelings of acceptance, job discretion, met expectations, sponsorship, career satisfaction, organizational commitment, work experience, management information system skills, and business skills. Sponsorship and career support were found to have a positive influence on career development regardless of gender but were also found to be low in the information systems sector thus leading to career plateauing and high attrition. Communications and business skills were found to be valuable for information systems professional men and women. Overall few differences across the career experiences of men and women were found.

Vinnicombe and Singh (2011) explored “locks and keys” to the executive boardroom for both men and women in the UK and found more similarities than differences. Broad categorization of phenomena that influenced career outcomes included human capital, individual, interpersonal, and family determinants. Specific barriers and enablers identified were: qualifications, personal traits including confidence and aggressiveness, level of rationality, being female including looks, politics including the “old boy’s network,” family roles including the division of family labour, having children, mentorship, challenging assignments, and visibility.

The experience of being a woman enterprise leader was explored by Weidenfeller (2012) in a study that identified six key themes associated with executive leadership, including: being driven by a desire to control their destiny, aspiring to positions with impact, achieving influence through a connect and collaborate style, initiating culture change while staying focused on results, and applying self-knowledge and resiliency to address challenges. Her conclusions proposed that individuals and organizations consider these key themes in professional development planning as did Ibarra et al. (2010) who proposed that leadership development for women should be considered as "identity work" and should not focus on teaching women the "rules of the game" established by men.

In a systematic analysis, Beeson and Valerio (2012) proposed six factors that should be considered by organizations and individuals to increase advancement of women in leadership positions as follows: strategic skills including creating priorities and spotting important trends, building a strong team including attracting talented members, managing implementation including processes and metrics, initiating innovation and change including knowing when new ways of doing business are required and introducing change successfully, lateral management including the ability to work across organizational boundaries, and executive presence including self confidence and making tough decisions. The analysis and study recommendations are cited later in this section.

Table 1 summarizes the career advancement influences explored in 12 studies over the past 35 years. The broad range of influences cited are of interest in the present study more so than specific influences.

Table 1. Summary of literature exploring career advancement influences

Authors, Year	Career Influences Explored
Kirkpatrick & Locke, 1991	Drive including achievement, ambition, tenacity, and initiative; desire to lead; honesty and integrity; self-confidence; cognitive ability; and knowledge of the business.
Mainiero, 1994	Getting assigned to a high visibility project; demonstrating critical skills for job performance; attracting top level support; displaying entrepreneurialism; and identifying what the company values.
Tharenou, 1997	Politics; mentors; traits; managerial skill; people skills; administrative skills; problem solving; decision making; goal setting; planning; management performance; interpersonal dealings/ communication; leadership and supervision; networks; starting opportunities; occupation type; discrimination; male non-minority hierarchy.
Kirchmeyer, 1998	Experience; tenure; career interruption; professional degree; masculinity; femininity; mentor; superior support; network support; spouse; non-employed spouse; children.
Lyness & Thompson, 2000	Cultural fit; social networks; mentoring; career management practices; access to development assignments; geographic mobility; education; tenure; development experiences including start-ups, downsizing, turning a business around; line and staff experience; track record; developing relationships large scope; managing a diverse business; international experience; prior company experience.
Sumner & Werner, 2001	Feelings of acceptance; job discretion; met expectations; sponsorship; career satisfaction; organizational commitment; work experience; communication skills; business understanding; computer skills; analytical skills; programming skills; project management skills.
Wood, 2006	Experience; taking opportunities; skills mix; adaptability; education; industry knowledge; networking; business development roles; honesty and integrity; technical knowledge; confidence; intelligence; vision; managing resources; logical approach; track record; team building; change realization; competence; luck; hard work; relationships; sensitivity; management support; focus; communication skills; leadership skills; dedication; desire.
Ezzedeen & Ritchey, 2009	Value system; hard work; integrity; serendipity; continuous learning; tenacity; risk taking; personal social support; professional social support; education; experience; supervisors; organizational support.
Ibarra et al., 2013	Identity development; management development; role models; mentoring; networks; visibility; career paths.
Vinnicombe & Singh, 2011	Drive; determination; energy; intelligence; education; communication skills; looks; family responsibilities; visibility; mentor support; opportunities for challenge.
Weidenfeller, 2012	Desire to control their destiny; aspiration to lead with impact; influencing through a collaborate style; initiating culture change while focusing on results; self-knowledge and resiliency.
Beeson & Valerio, 2012	Strategic skills; team building; managing implementation; initiating innovation; lateral management; executive presence.

2.4 Initiatives to Increase the Representation of Women

Having explored the literature relative to the barriers and enablers to career advancement, what follows is a survey of literature related to the final research question about how to inform initiatives that might lead to increased representation of women at senior levels in the ICT sector. Human resource management is considered to be a strategic function in organizations that supplies and coordinates the appropriate deployment of human resources (Suriyamurthi, Velavan, & Radhiga, 2013). A review of leading journal titles related to human resource management provides evidence of the discipline's evolution beginning with the long-established *Personnel Review* to the more recent Human *Resource Management Journal* and the *Journal of International Human Resource Management* (Legge, 1995). What was once the domain of personnel management is now the world of global talent management. The function has evolved from a transactional one to that of strategic business partner and is generally thought to consist of workforce planning, recruitment and selection, performance management, employee training and development, compensation and benefits, employee relations, and labour relations, as reflected in typical human resource management textbooks (Dessler & Chhinezer, 2016).

Career management can be thought of as efforts to influence the careers of individuals or groups of individuals and is thus sometimes considered to be the responsibility of individuals while sometimes being considered the responsibility of organizations, typically the human resource function (Applebaum, Ayre, & Shapiro, 2002; Arnold, 2001). Career management includes activities that involve the individual, the manager, and the organization in two broad categories of career planning and career development where the organization provides models, resources, training, counselling, and opportunities through processes facilitated by the manager and directed at the employee (Applebaum et al., 2002). An empirical study of human resource management in organizations established five clusters of career management practices according to their level of sophistication and the level of involvement required, to better understand their application and their

suitability across organizations. The resulting model suggests that formal mentorship programs, developmental programs, and succession planning are beyond the basic level of career management as compared to, for example, lateral moves or formal education that might be encouraged by organizations.

Mentorship programs and developing mentor relationships were key career advancement strategies explored in many studies (Adya & Cotton, 2012; Pfleeger & Mertz, 1995; Tharenou, 1997, 2005), including e-mentoring where the mentor-mentee relationship was enhanced through the use of technology (Headlam-Wells, Gosland, & Craig, 2005). Research suggests that managers who develop the careers of others are more likely to advance their own careers and that women are more likely to develop other women, whereas men are more likely to develop other men (Dinolfo et al. 2012). Alternative thinking advances the "Queen Bee" syndrome that suggests women in senior positions don't help other women to get ahead. There seems to be general agreement, however, that being a mentor is an effective career advancement strategy not just for the mentee but for the mentor as well. Although mentoring is generally considered positive for individuals and organizations, formal mentoring programs established by organizations that include mentor-mentee relationships do not always produce positive results and formal mentoring programs are being reconsidered given the shift to more self-managed careers (Eby, Butts, Lockwood, & Simon, 2004).

Leadership development programs have been a topic in business literature for many years and are considered a strategic imperative for business in that they can lead to improved individual and organizational results (Cacioppe, 1998). A plethora of literature related to leadership development programs seemed to emerge in the years surrounding the turn of the millennium. At that time, while being seen as strategic, the effectiveness of formal leadership development programs in organizations was questioned and it was suggested that human resource development professionals should focus more on understanding the needs of organizations in the design of such programs including using them to shape the views of participants (Collins, 2002). More recently the current and future importance of such programs has been re-established as a high priority for

organizations through a survey of 500 executives who identified leadership development as their highest human resource priority (Cacioppe, 1998). The same research reported the investments that organizations make in leadership development can be significant and suggested a return on investment is difficult to realize since tying short term business results to long term personal development, which often includes significant individual reflection, can be problematic.

Workforce planning involves a complex process of understanding forecast staffing requirements, including at the leadership level, relative to estimated supply and also includes the development of strategies to align the supply and demand equation (Bechet, 2002). Succession planning is considered to be in the domain of workforce planning and managing leadership continuity is critical to the success of organizations especially given current demographics that anticipate significant "baby boomer" retirements (Rothwell, 2010). Organizations have increasingly set gender targets in their workforce planning practices and have been encouraged to do so by governments and special interest groups. Measurement and reporting initiatives, including sometimes quotas, have been introduced in many countries more aggressively and with positive results. A variety of regulatory mechanisms are available to governments, ranging from setting standards to implementing mutually agreed approaches and targets, and would seem to represent a hybrid policy approach that is not necessarily enshrined in law but instead is sometimes proposed or encouraged by representative bodies and results in rivalry among firms to achieve the policy goal (Klettner et al., 2016). Examples of policy by country include Australia, which introduced a quota system in 2011 set at 25% representation for board membership by 2013 and 35% by 2018; France, which in the same year applied a 40% target by 2014; and Sweden, which established a "comply or explain" code requiring companies to strive for gender parity on boards (Ontario Securities Commission, 2013). Initial results from these initiatives seem to be positive and the impact on representation has been described as promising but still inconclusive (Sojo, et al., 2016).

The continued under representation of women suggests that individual and organizational efforts to "fix" women have failed and, moreover, that initiatives that

are typically targeted at the individual are self-perpetuating and paternalistic in that they imply that the gender "issue" is a woman's issue (Wittenberg-Cox, 2013). The following review will explore research that identifies strategies for leadership development in general, as well as studies that are focused on the advancement of women mostly from an organizational perspective. The current section describes career influences primarily at the individual level thus the following section of the literature review will begin with a brief review of some individual career advancement strategies followed by a more detailed review of literature related to strategies at the organizational level. Criticism of organizational initiatives that may advance women such as mentoring programs or leadership development training include suggestions that they are "feel good" initiatives that are not targeted at the right level and should instead be more strategic and holistic at the organizational level, which is a theme of the following survey of literature.

2.4.1 Survey of Organizational Initiatives

Studies about women in leadership, women in technology, or more broadly about gender in the workplace typically conclude with implications for organizations that are frequently aimed at the human resource function and at executive levels. Themes across the literature reviewed for the present study include how these initiatives need to be driven by senior leadership and be holistic in nature (Barsh & Yee, 2012; Turner & Kalman, 2015), include a substantial professional development program with a mentoring component and stretch assignments (Barsh & Yee, 2012; Fulmer & Hanson, 2010; Fulmer, Stumpf, & Bleak, 2009), address biases in the workplace (Hoyt & Murphy, 2016; Whelan-Berry & Gordon, 2000; Williams, 2014), are women-friendly in that they support flexible work arrangements (Beninger & Carter, 2013; Cattaneo, Reavley, & Templer, 1994); provide for transparency and accountability of results (Barsh & Yee, 2012; Fulmer & Hanson, 2010; Turner & Kalman, 2015). The following is a survey of studies that identified organizational initiatives to develop and advance women. The survey is subsequently summarized in Table 2.

Approaches to maximize the potential of an inclusive workforce were proposed by Turner and Kalman (2015), including specific strategies that: provided visible evidence of action; were transparent especially about key appointments that might not be seen as inclusive, encouraged workforce mobility, embraced performance management, and were cross functional in nature. They argued that these strategies were most effective when they were driven by the chief executive officer and were clearly aligned with overall organizational strategy. A case study of large organizations identified strategies to develop high potential leaders including the importance of taking an integrated approach across the organization and involving the executive leadership in a programmatic way through leadership summits and board involvement in identification of rising stars (Fulmer et al., 2009). The study identified key initiatives to be considered as part of a development program including specialized leadership development tracks, development or stretch assignments, specialized learning opportunities, leveraging technology, action learning, as well as coaching or mentoring.

In a study of stereotype threats in leadership contexts, a model was proposed to understand cues, reactions, and consequences of factors that account for why women are often not associated with notions of leadership. Biases were explored and the approach of implementing "bias interrupters" was proposed (Hoyt & Murphy, 2016). A related study considered how these interrupters might be especially important for organizations given the legal exposure of human resource management practices that ignore biases and the potential for individuals to litigate in situations of discrimination (Williams, 2014). The study identified the following specific initiatives that organizations might undertake to minimize bias: increasing unconscious bias awareness in evaluations of others, examining gendered aspects of organizations or jobs, intentionally increasing minority representation at all organizational levels, identify role model non-gendered organizations, and make explicit the characteristics of good leadership that avoid stereotyping.

In a longitudinal study of managers, Beninger and Carter (2013) established that flexible work arrangements, such as flexible arrival and departure times, telecommuting, flexible work hours, compressed work weeks, reduced or part time

working arrangements, and job sharing are used by a majority of both men and women. They found that these arrangements are used in many organizations, and moreover, where they are not available organizations, see fewer women aspiring to senior positions. Woman-friendliness is considered the extent to which organizations behave culturally in ways that accommodate women and protect their interests (Cattaneo et al., 1994). How human resource strategies could be strengthened to consider the career needs of mid-career women was explored by Whelan-Berry and Gordon (2000), who identified career and family challenges and proposed family-friendly practices for organizations to adopt in order to support women in their workplaces. Sometimes these programs are referred to as “Mommy tracks” in the sense that they are career tracks for women with children. The strategies included: setting family friendliness as an organizational goal, active efforts to achieve pay equity, enhancing benefits that include flexible work arrangements, emphasizing family friendly beliefs in culture and systems, and comprehensive career development programs.

Fulmer and Hanson (2010) studied "high-tech firms" to understand how the challenges they faced in developing leaders might be different from those of other organizations. They ranked the most common leadership development techniques used by technology firms including: leaders teaching leaders, assessment instruments, instructor-led sessions, mentoring and coaching, and action learning. They also ranked topics typically covered with these methods, including: increasing self-awareness, coaching for performance and development, globalization, business acumen, virtual team collaboration, customer centricity motivating others, managing ambiguity and complexity, strategy implementation, performance and talent management, as well as leading change. Although the study did not specifically address gender, the research insights may help technology firms to improve leadership development and are relevant to this study including: establishment of mature leadership development processes, strong measurement systems, increasing managers’ awareness of their leadership impact, creating a coaching culture, and implementing sustainable leadership development programs.

In a study sponsored by McKinsey and Company, Barsh and Yee (2012) identified companies with a consistently high number of women at all levels of the organization and identified barriers to advancement including a leadership commitment to advancing women. They identified strategies organizations can adopt to advance more women, including the organizational head showing commitment to diversity, appointing a diversity leader with organizational clout, managers who actively sponsor women, a talent management program that includes a focus on metrics, and accountability for realizing diversity goals. The McKinsey study along with studies by Catalyst (Carter & Silva, 2010) represent practitioner research and are not peer reviewed but they bear strong similarities to academic studies with one exception. The practitioner studies seem to be more focused on organizations and less on the individual; however, conclusions from both academic and commercial research are similar.

Recent studies suggest that measurement of workforce demographics is an effective initiative to help advance women (Barsh & Yee, 2012; Kurtulus & Tomaskovic-Devey, 2011; Sojo et al., 2016; Turner & Kalman, 2015). Affirmative action programs involving workforce targets or quotas for underrepresented groups were studied between 1973 and 2003 and had a positive impact on the representation of minorities including women in the US (Kurtulus, 2012). This strategy bears some further discussion since it is also more recently being applied by governments with some notable success. Sojo et al. (2016) explored how reporting requirements, targets, and quotas were being implemented in many parts of the world. In three studies, they reported that these measurement practices were leading to increased representation of women on boards of public companies and in government legislative bodies, sometimes within a few years. Described as demand-side strategies, this approach contrasts with supply side strategies, like leadership development or mentorship, that are much more prevalent in the literature. In Canada, a regulation requiring most public companies to set targets for more diverse Boards was introduced in 2014 (Ontario Securities Commission, 2014). It would seem that extension of this approach, further down the organizational ladder from the Board level, might be considered further.

Table 2 summarizes research reviewed that identified and discussed initiatives organizations might consider to increase the representation of women

Table 2. Summary of literature exploring initiatives to increase representation of women

Authors, Year	Strategies to Advance Women - Organizational Level
Cattaneo et al., 1994	Women in management as a strategic human resource imperative.
Barak, 1999	A strong mentoring process; diversity focus groups to uncover issues; workshops to raise awareness of diversity.
Whelan-Berry & Gordon, 2000	Family friendliness as an organizational goal; active efforts to achieve pay equity; benefits that include flexible work arrangements; practices that emphasize family friendly beliefs in culture and systems; comprehensive career development programs.
Dries, 2007	High potential management development programs.
Fulmer et al., 2009	Integrated approach: leadership and board involvement/ commitment; specialized leadership development tracks; development/stretch assignments; specialized learning opportunities; leveraging technology; action learning; coaching/ mentoring.
Trauth, Quesenberry, & Huang, 2009	Mentoring programs; flexible work arrangements; climate monitoring; mentoring management on gender.
Fulmer & Hanson, 2010	Mature leadership development processes; measurement systems; increasing managers' awareness of their leadership impact; creating a coaching culture; sustainable leadership development programs.
Ely, Ibarra, & Kolb, 2011	Addressing second generation bias in organizational settings; women leadership programs.
Barsh & Yee, 2012	The organizational head showing commitment to diversity; appointing a diversity leader with organizational clout; managers who actively sponsor women; a talent management program with a focus on metrics; accountability for realizing diversity goals.
Dinolfo et al., 2012	Mentorship programs.
Kurtulus, 2012	Affirmative action; measurement; accountability.
Beninger & Carter, 2013	Flexible work arrangements.
Turner & Kalman, 2015	Visible evidence of an inclusion focus; transparency about key leadership appointments; encouraging workforce mobility.
Hoyt & Murphy, 2016	Increasing unconscious bias awareness in evaluations of others; examining gendered aspects of organizations or jobs; intentionally increasing minority representation at all organizational levels; identifying role model non-gendered organizations; making explicit the characteristics of good leadership that avoid stereotyping.
Sojo et al., 2016	Quotas; targets; measurement; accountability.

2.5 Summary

A lack of diversity and in particular the participation of women at senior levels in the workforce has long been considered a lost business opportunity for organizations and economies, as well as a social justice issue (Catalyst, 2004; Noon, 2007; Trauth et al., 2008). Many studies have explored the glass ceiling phenomenon including its causes, and to a lesser degree potential solutions (Baxter & Wright, 2000; Morrison & Von Glinow, 1990; Morrison et al., 1987). Governments are introducing requirements for organizations to set targets and report on the representation of women with some recent success (Barsh & Yee, 2012; Kurtulus & Tomaskovic-Devey, 2011; Sojo et al., 2016). The ICT sector has been a focus of attention among those advocating for diversity because of it is a heavily male dominated workforce (Lapowsky, 2014; Williams, 2014). In Canada, about 23% of the ICT workforce is women and Canadian ICT industry associations have launched initiatives to understand and improve the under representation of women (ICTC, 2015a).

Careers have been a topic of research since the 1920s and scholars such as Schein (1971, 1987, 1990) and Super (1980, 1990; Super & Hall, 1978) have developed ways to conceptualize a career and situate careers in the lives of individuals, in organizations, and in society. The Life-Career Rainbow is one such model that illustrates roles and career patterns in a lifecycle that has been widely cited over the years (Super, 1990). The pathways to careers have changed over the years and now they are thought of in less linear ways, they are boundaryless (Sullivan, 1999). Yet, the glass ceiling persists.

A theoretical foundation for the study of women in ICT has emerged through the Individual Differences Theory of Gender and IT. This theory challenges traditional thinking about the influence of nature and nurture in what is becoming an increasingly complex phenomenon and area of study (Quesenberry & Trauth, 2012; Trauth, 2006, 2011; Trauth, Quesenberry, & Huang, 2009). The theory argues a fresh research perspective for understanding how glass ceiling notions are manifest, such as the chilly climate (McCord, 2000; Morrison & Von Glinow, 1990; Roldan, 2004; Soe & Yakura, 2008; Tripp-Knowlls, 1995), the double bind

(Ibarra et al., 2013)., the Queen Bee (Vial et al., 2016) and the good old boys network (Glass & Cook, 2016; Lyness & Thompson, 2000; Lyons, Mcarthur, & Devries, 2007; Nelson-Porter, 2004; Vinnicombe & Singh, 2011; Wilson, 2001). Research suggests women are not welcome in some male dominated organizations (Roldan, 2004), women need to behave like men to get ahead and when they do they are not liked (Ibarra et al., 2013), some women leaders don't support aspiring women leaders because it makes them look weak (Vial et al., 2016), and in the end, the good old boys will look after themselves at the expense of women (Vinnicombe & Singh, 2011). Women are paid less than men and get less credit for doing more work (Carter & Silva, 2010). A cumulative disadvantage (Valian, 1998) develops throughout the careers of women and exists in male dominated sectors, such as ICT (Tripp-Knowlls, 1995). Women are perceived differently than men as leaders (Eagly & Karau, 2002) and, moreover, research suggests that women's self-perceptions are different than men's, including being less self-confident (Kay & Shipman, 2014) and less assertive (Fels, 2004) and this can negatively influence their careers. Women tend to be the caretakers at home and studies have explored how they take greater responsibility for the home with sometimes negative impacts on their careers (Whelan-Berry & Gordon, 2000).

Many studies have explored what women need to do to get ahead. Sometimes these studies are specific to women and sometimes they consider advancement strategies for both women and men. The right characteristics for leadership have been explored in many contexts. The keys to the boardroom for women often include confidence, mentorship, family support, and challenging assignments that are visible in organizations (Vinnicombe & Singh, 2011). Leadership development programs and mentoring programs are also seen as keys to success (Dries, 2011). Many of these strategies for advancement have been applied by men and women but with different results according to gender, generally favoring men (Carter & Silva, 2011). Organizations are developing and implementing strategies to advance more women and human resource research in this domain typically suggests a holistic approach that starts at the executive level (Cattaneo et al., 1994). Programs that minimize subconscious bias,

encourage mentorship and sponsorship, support flexible work arrangements and family friendly practices, as well as leadership development are common (Barsh & Yee, 2012; Fulmer et al., 2009). The impacts of organizational strategy at the macro level including internationalization plans have also been proposed to understand glass ceilings. In an empirical Canadian study, Ng and Sears (2017) identified internationalization as a barrier to advancing women into management positions. Organizations are also complying with government legislation and regulations to set targets and report on the number of senior women leaders, which is resulting in increased representation and shows promise as an impactful approach to the problem (Kurtulus, 2012; Sojo et al., 2016).

Despite all the research and the organizational initiatives that studies inevitably suggest, the glass ceiling phenomenon persists. The needle has not moved in the direction of increased representation of women in the Canadian ICT sector over the past 35 years (see Figure 1). Although less research is available to understand the Canadian context of this phenomenon compared to other jurisdictions, there is clearly a problem and thus an opportunity to improve the situation in Canada. The present research seeks to understand the Canadian perspective of this phenomenon and what it might suggest about how to increase the representation of women in the Canadian ICT sector. The following chapter will describe how this research accomplishes that goal.

CHAPTER 3 METHODOLOGY

3.1 Introduction

This chapter will describe the research methodology and is structured in the following way. The introduction includes the research questions and some of the theoretical perspective applied. The research design discussion includes more of the theoretical underpinnings, as well as methods used, including data sources, analysis techniques, and validation strategies. The rationale for a comparative case study approach will be explained. A detailed description of the cases studied will be provided in the subsequent chapter including the Canadian geographic regions and the executive interview participants.

The study purpose is to explore patterns in the career experiences of Canadian ICT leaders in order to inform the ongoing discussion about the under representation of women at senior levels in the Canadian ICT sector and the ongoing pursuit of initiatives that might increase ICT sector gender balance. The primary research question is: *How might patterns in the career experiences of ICT executive men and women across Canada inform initiatives to increase the representation of women in the Canadian ICT sector?* The specific study questions are as follows:

- How do ICT executive men and women across Canada describe their careers?
- How do ICT executive men and women across Canada describe barriers and enablers to their career advancement?
- What are the ICT executive career experience patterns across gender and across regions of Canada (barriers, enablers, outcomes)?
- What initiatives might increase the representation of women in the Canadian ICT sector?

Career experiences are individual and complex (Arthur et al., 1989), as are the organizations and the individuals who lead them. The plethora of research available about the lack of women in ICT and the slow pace at which women's participation has increased also suggest the problem of under representation is complex. The study seeks to understand the problem of the under representation

of women in the Canadian context, by exploring the careers of executive men and women, so that individuals and organizations might take actions to help more women advance into senior positions and in the sector overall.

The career and life experiences of the individuals and their subjective description of these experiences implies an interpretive approach to the study. However, since the study intention is to identify initiatives that organizations and individuals might undertake to increase the representation of women, an approach that would appeal to the ICT sector as reader of the research would also be appropriate. This would suggest a more positivist perspective in order to suit the scientific, data-driven nature of ICT sector members (Enns, Ferratt, & Prasad, 2006). Thus, the study will principally take an interpretive perspective but will also apply a more objective perspective in order to balance these two perspectives.

Since the research is focused on a question related to “women’s situations and how institutions frame those situations.” (Creswell, 2013, p. 29), it also takes a feminist perspective. However, despite the researcher self-describing as a feminist, the study is not grounded in feminist theory. This perspective is based largely on the intention to keep an open mind and follow the data rather than presume that gender differences exist in the Canadian ICT context. Although the study hopes to lead readers towards transformative initiatives, it does not begin by taking a critical perspective. The study applies a gender lens that is at the core of the research question and seeks to understand any patterns according to gender. Power relationships and how men and women respond to them are explored, which is a central tenant of feminist research (Stewart, 1994). Arguably, a feminist lens can be applied in any research (Moss, 2007) and although part of the perspective taken in this study, it is not the central one. Rather, a combination of perspectives was chosen for the study and these are described in the following section.

The Individual Differences Theory of Gender and IT (Trauth, 2006; Trauth et al., 2010; Von Hellens, Trauth, & Fisher, 2012) is an emerging theoretical perspective that influenced methodological decisions for this study. Trauth (2011) laments the lack of theoretical perspectives in the growing body of research related

to gender and IT. She suggests that the underlying theory in most studies is either implied or absent and she posits a new alternative approach to essentialist and social constructivist theories that are often applied in research related to gender and IT. Essentialist theory suggests that fundamental natural differences exist between men and women and they have a primary influence on their participation in the workplace (Quesenberry & Trauth, 2012). Social Constructivist theory on the other hand suggests that participation in the workplace is more influenced by culture and context. Trauth suggests that neither of these theories serve the needs of the growing volume of research related to gender and IT (Trauth, 2002, 2006; Trauth et al., 2004). Essentialist theory is too limiting and, for example, does not account for the significant IT contributions of Grace Hopper, a woman, who is credited with developing the first programming language. Social Constructivist theory is more commonly applied in recent research relating to gender and IT but has led to inconsistent findings across cultures that Trauth argues are a result of women having different interpretations of and reactions to messages received from society. Her theory challenges the current, more common, social constructivist view and calls for greater consideration of within gender differences. She proposes methods to incorporate this perspective that have influenced this study, as will be described.

A combination of qualitative interpretivist, positivist, and feminist perspectives, including the Individual Differences Theory of Gender and IT, are the theoretical underpinnings of the study. In this sense the study applies a pragmatic paradigm where the approach used will be sufficient to get the job done, rather than focusing on any one philosophical foundation (Creswell, 2013).

3.2 Research Design

Qualitative interpretive inquiry explores how situations have occurred (Trauth, 2011) and is suited to the research purpose of understanding how the careers of Canadian ICT senior executives have evolved in a broad context. The intention of the study is to describe the careers and to discover patterns in order to inform future decision making of organizations and individuals. Although new

theory may emerge, there is no specific intention to develop new theory since many studies have explored the under-representation phenomenon in other, non-Canadian contexts. Nor is there any intention to test specific existing theory because there is no research about careers in the Canadian ICT sector that points to a specific theory to test. Moreover, none of the many prevailing theories about the under representation of women in ICT are of particular interest to the researcher. The focus is to understand the careers of Canadian ICT executives and to discover patterns, if any, that may or may not be supported with existing theory. Thus, both an inductive and deductive approach will be taken focusing first on the data collected and then on its interpretation in order to understand the under-representation phenomenon as will be described.

A significant influence on the study approach and choice of methods came from a Canada-wide project involving seven provincial ICT industry associations, as well as the national sector council and the federal government department, Status of Women Canada. These organizations collaborated in a three-year project, initiated in January 2013, which was coincident with the early proposal stages of this research. The industry association of the project influenced the research methodology, specifically the choice of a qualitative approach involving interviews with ICT executives that was a project requirement for Digital Nova Scotia, one of the project participants and a sponsor of the study. In addition, the Digital Nova Scotia project was targeted at larger ICT organizations because the potential to increase the representation of women in the ICT sector was considered to be greatest in larger organizations where more ICT workers are employed. Thus, some of the methodological decisions were opportunistic, based on the potential to conduct the study in cooperation with Digital Nova Scotia. Interview data collected for the study was shared with Digital Nova Scotia for its project. The relationship between the Digital Nova Scotia project and the research study was clearly described in participant consent forms for the study that were approved by the Dalhousie Research Ethics Board. Rich data available from interviews also suited the complex nature of the research topic. Careers involve complex choices

(Arthur et al., 2005) and qualitative inquiry is an appropriate approach to understanding such choices.

The essence of a case study is to “illuminate” decisions, the reason for them, and the result of those decisions in context (Yin, 2014, p. 15). A case study explores “what can be learned *here* that a reader needs to know.” (Stake, 2006, p. 11). Central to case study methodology is selecting the highest level categorization of phenomenon to be studied, or what Stake refers to as the quintain. Multiple case study research considers individual cases along with what binds them together and explores what is similar and what is different about them. The purpose of this study is to explore patterns in the career experiences of ICT executives in order to inform individuals and organizations, thus cases will be considered both individually and within the context of gender and geographic region. The quintain in this case analysis is the intersection of the individual ICT executives and their career story, their gender, and the geographic region. This three-dimensional definition of quintain suits the exploratory nature of the research. It does not presume that career experience patterns exits across gender or region but its sets up a reasonable framework for analysis. This view of quintain also aligns with the theoretical foundation of the study, previously described as pragmatic, in that it sets a reasonable framework for analysis while leaving room for changes that may emerge from the data, which is consistent with Stake (2006).

> Whether everything actually is a part of everything or whether we have a human capacity for seeing everything as a part of everything, it all becomes more complex as it becomes better known, and it cries out for being still better known. (p. 7)

From this definition of the case and the quintain we can consider an additional methodological layer of the study, namely the conceptual framework for analysis of the cases that emerged across a two phased process.

The study proceeded in two broad phases. Driven in part by the Digital Nova Scotia project as previously discussed, the first phase explored careers of Nova Scotia ICT women executives. The intent of the first phase was to explore career barriers and enablers for women in a Nova Scotia context and to develop a preliminary coding framework to support analysis of barriers and enablers in the

broader study being considered. Coding is an aspect of analysis where data are explored, labeled, and linked in a cyclical manner (Saldana, 2008). During the first phase of the study, detailed interviews with eight women executives were conducted as will be described in the data collection section of this chapter. Analysis of interview data followed three broad categories chosen based on a review of literature that favoured Schein's career and organizational model (1971) and Super's Life-Career Rainbow (1980, 1990). The categories used for the initial analysis included: the individual, the organization, and society. The individual category considered traits, education, skills, and relationships. The organization considered constructs such as culture, stretch assignments, and policy. An additional category, namely family, was introduced in the second phase to more fully consider the Individual Differences Theory of Gender and IT that advocates for greater consideration of individual differences in studies that explore gender and IT questions. The geographic region also provides important context for the study and the "habitus" for the individual careers including regional geography, history, economy, education system, and the ICT industry ecosystem. Thus in the second phase more attention was paid to these important contextual considerations by collecting additional secondary data mostly in the form of reports.

3.2.1 Data Sources

For the first phase of the study, data sources consisted primarily of recorded and transcribed interviews with senior executive women from the ICT sector in Halifax, Nova Scotia. In the second phase participants from the Region of Kitchener-Waterloo in Ontario, as well as participants from the Vancouver/Victoria region in British Columbia area were added. In the second phase, the study also expanded to include both men and women from all regions. In addition to recorded and transcribed interview data, participants also provided curriculum vitae documents with detailed work history details. In many cases, the participants suggested that work history details were best described in their profiles from LinkedIn®. Profiles for all candidates were downloaded and stored as documents.

In the second phase, additional data sources were also introduced consisting primarily of published documents related to the regional geographies, history, economies, education systems, and their ICT sector ecosystems. Across both phases, the primary data source consisted of interviews with 48 Canadian men and women ICT executives. Interview participants included eight ICT executive women and eight ICT executive men from each of the three regions. Yin (2014, p. 57) suggests that three or more cases provides a reasonable number for comparison. The choice of eight interview participants was pragmatic. The first phase of the study focused on Halifax, which is the smallest of the regions, and initial efforts to identify ICT senior executive women influenced the decision about the number of participants to target. Initial conversations with Digital Nova Scotia suggested that identifying a pool of senior executive women participant candidates could be challenging since they were few in number. A review of the ICT sector demographics, in collaboration with Digital Nova Scotia, suggested that in the range of 50 women might fit the initial project senior executive criterion which was defined as having 50 employee reports for at least five years in the ICT sector. A target of eight executive women participants was then matched with a target of eight men participants for comparison purposes in each of the three regions.

Returning to the methodological question of the case study quintain and reflecting on the three-dimensional quintain model proposed as the intersection of individual, gender, and region, the study explored twelve cases as follows:

1. Forty-eight Canadian ICT executives
2. Twenty-four Canadian men ICT executives
3. Twenty-four Canadian women ICT executives
4. Sixteen Nova Scotia ICT executives
5. Eight Nova Scotia men ICT executives
6. Eight Nova Scotia women ICT executives
7. Sixteen Ontario ICT executives
8. Eight Ontario men ICT executives
9. Eight Ontario women ICT executives
10. Sixteen British Columbia ICT executives

11. Eight British Columbia men ICT executives
12. Eight British Columbia women ICT executives

The following framework was used for the case analysis:

Table 3. Case framework

Canada			Nova Scotia			Ontario			British Columbia		
Total n=48	Men n=24	Women n=24	Total n=16	Men n=8	Women n=8	Total n=16	Men n=8	Women n=8	Total n=16	Men n=8	Women n=8
Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9	Case 10	Case 11	Case 12

The analysis proceeded based on the potential for patterns to emerge in all of these cases.

In addition to semi-structured interview data as will be described, individual participant categorical data was collected consistent with the Theory of Individual Difference in Gender and IT (Trauth et al., 2004). What follows is a description of the categorical data with specific categories shown in italics:

- Demographic Information
    - *Age*
- Family Background
    - Place of birth: *Atlantic Canada,* if the participant was born in the province of Newfoundland and Labrador, Nova Scotia, New Brunswick, or Prince Edwards Island; *Central Canada,* if the participant was born in Ontario or Quebec; *Western Canada,* if the participant was born in any other Canadian Province or Territory, or *USA*, *Europe*, *Asia*. Participants were categorized as born *In Case Region* where the province for which they were a study participant was within the place of birth category as described above. For example, a participant in the Nova Scotia Case Group who was born in New Brunswick was considered to be born *In Region*. A participant in the Ontario Case Group who was born in Alberta was considered to be born *Out of Region*
    - Relationship status (*Single, Married*, or *Divorced* if not remarried)
    - *Number of children*

- Education
    - Level and type of education (Degrees by name were categorized as *Technical Degree* if they were Science, Engineering, Mathematics, or Computer Science related); *Non-Technical Degree* if they were Business, Arts, other related). *Mixed Education* was a category where the participant had a degree from both the technical and non-technical categories.
- Job Title
    - *Job Title* for positions held by type (*ICT* where the job was in an ICT-related department or consisted primarily of ICT duties, and *Non-ICT*)
- Career History
    - *Organizations Worked* (*ICT* where the organization was a provider of ICT products and services, and *Non-ICT*)
    - *Assignments Lived and Worked* (*In Case Region* where the location position was in the province for which they were a study participant, otherwise *Out of Region* including specific categories of *USA* and *Rest of World* for locations outside Canada or the USA)

Participants sometimes provided resumes and all of them encouraged referring to their LinkedIn® profiles, which were collected as data. Other data sources included secondary data to provide context to regional case analysis, such as reports related to national regional ICT sector make-up or socio-economic data.

3.2.2 Data Collection

Data collection proceeded in two phases beginning with the first case consisting of executive women in Nova Scotia followed by the other case groups including men and women from all three case regions. The candidate recruitment process was consistent across all phases. Purposeful snowball sampling (Polkinghorne, 2005) was used to identify candidates meeting the study recruitment criteria. This criteria sought to establish a consistent definition of “executive” based on the number of employees reporting to the executive for a specific timeframe. This indirect “span of control” has long been considered a

reasonable indication of job scope (Pennings, 1973) and is a common indicator of what is considered to be executive status (Hamori, 2006). Consultation with the provincial industry association, Digital Nova Scotia, helped to establish the span of control that would reasonably result in a participant list in the range of eight executive women for the first case. A workshop was held with Digital Nova Scotia representatives to identify a target list of 12 women candidates who were approached following a recruitment protocol approved by the Dalhousie Ethics Review Board. Initial contact was by electronic mail followed by phone calls that typically required a voice mail message and follow-up phone call. In some cases conversations with executive assistants took place in order to convey information about the study according to the ethics protocol. In a few cases, telephone and electronic mail messages were not returned within the established limit of three reminders and as a result, they were considered as a refusal. Interview requests continued until eight participants were confirmed and consent forms were signed and returned.

The recruitment process used for the first phase was repeated in other case regions. The sequence of regions for recruitment was first Nova Scotia, followed by British Columbia, then Ontario. In all cases a local ICT industry association was first approached to help identify the candidates for recruitment. The organizations consulted for recruitment purposes are identified in Chapter 4 where cases are described. The three organizations were part of a national program sponsored by the Government of Canada to advance women in the ICT sector. Similar informed consent forms were used in all regions with the only difference being the identification of the local industry related association as the study expanded beyond Nova Scotia.

The first phase, Nova Scotia recruitment and interviews took place over a fourteen-week period. Subsequent recruitment and interviews took place over a fourteen-month period. Interviews were sometimes rescheduled due to the busy schedules of executive participants. In general, the participants were asked to describe their careers, including barriers and enablers to their career advancement. Semi-structured interviews were used because of the rich detail

such conversations can provide (Hoopes, 1979). The interview protocol applied broad open ended questioning. The conversational style was similar to that used by Ezzedeen and Ritchey (2009) in that it developed rapport and allowed for going on tangents during discussions. The interviews typically began with small talk and a reference to confidentiality as described in approved consent materials.

There were three phases to interviews beginning with questions about the participant's career history, "Please describe your career," to more focused questions like, "Please describe any barriers or enablers to career advancement you experienced," and concluding with "What are you most proud of about your career and do you have any regrets?" Towards the end of the interview participant categorical data was gathered. A summary of the questions asked was also offered and participants were invited to reflect on the interview overall and additional comments were requested. The Interview Guide is included as Appendix B. Interviews ranged in length from seventy-five minutes up to two hours. During the first phase of the study follow-up interviews were conducted for member checking purposes, however, these were deemed to be superfluous as will be described in the validation strategies section of this chapter.

The semi-structured conversational interview approach suited the study purpose to explore patterns in career experiences including barriers and enablers to career advancement. Participants were encouraged to provide top of mind answers with minimal direction. In most cases the first interview question, which invited participants to describe their career "in any way you want," generated a robust response and served to set the retrospective interview tone. Generally, participants spoke at length in response to questions. Some participants asked for clarification in relation to the wording of questions. For example, a few participants sought clarification on what is meant as an enabler or a barrier. In these situations, direction was provided that was consistent with the semi-structured nature of the interview protocol. An enabler was suggested to be something that "moved your career forward" where a barrier had the opposite effect. In a few cases participants commented on the meaning of "forward" or "career advancement." As is described next in this chapter, these comments made by participants were generally offered

in a reflective context where direction from the interviewer was not sought but instead participants were “thinking aloud” and answered their own question, which was recorded as rich qualitative data.

3.2.3 Data Analysis

Each individual interview was audio recorded, transcribed and imported into the qualitative data analysis program NVivo wherein it passed through several cycles of analysis in order to answer the research questions centred on exploring patterns in the career experiences of ICT executive men and women across Canada. Data attributes were assigned to each individual participant based on the categorization data collected. This was done so the data could be examined by attributes such as gender, region, type of education, family background, etc. as described in the data collection section of this chapter. The analysis was exploratory, looking for patterns, and proceeded in a manner that followed the data using features of the software enabled qualitative data analysis.

Thematic analysis looks across data to find patterns and meaning. Thematic analysis at the semantic level looks primarily at the data as presented where the latent level looks beyond the data and is more focused on interpretation and bringing meaning to the data (Braun & Clarke, 2006). Coding is an aspect of analysis where data is explored, labeled, and linked in a cyclical manner (Saldana, 2008). For the first phase of the study, semantic analysis was chosen because of its simplicity. The data were coded and thematic analysis at the semantic level was undertaken following a four-step procedure including:

1. An initial review with preliminary coding.
2. Identification of patterns and combining of preliminary codes.
3. A second round of coding following the establishment of condensed codes.
4. Identification of over-arching themes and connecting themes into a story that informed the research question.

Thus, there were two rounds of coding for the first phase that analyzed the careers of eight women in one region. The first round of coding in the first phase of the

study applied open coding techniques that established high level concepts and categories while the second round applied axial coding and was based more on interpretation of the data (Strauss, 1989).

The second phase of the study involved an additional 40 participants and introduced secondary data sources about the regions as previously described. The second phase involved more significant use of the NVivo program for analysis and followed a similar process to that of the first phase with an increased focus on axial coding in order to explore relationships across the larger data set. Coding was continuous as data were captured with major coding reviews and reflection when data were collected from the Nova Scotia men, followed by the second region (British Columbia) data collection, and then again when the third and final (Ontario) region data were collected. The five rounds of coding and the cases they involved are depicted in the following table with the breadth of cases shown for each round beginning with the two rounds for Nova Scotia Women, Case 6 (n=8), shown as (Coding 1 and Coding 2) respectively.

Table 4. Five rounds of coding

Canada			Nova Scotia			Ontario			British Columbia		
Total n=48	Men n=24	Women n=24	Total n=16	Men n=8	Women n=8	Total n=16	Men n=8	Women n=8	Total n=16	Men n=8	Women n=8
Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9	Case 10	Case 11	Case 12
					Coding 1						
					Coding 2						
			Coding 3 (Cases 4 - 6)						Coding 4 (Cases 10 - 12)		
Coding 5 (Cases 1 through12)											

Data analysis proceeded from the data sources according to four schemas that made up the analysis framework as will now be described. The data were coded based on a level of analysis framework inspired by Schein and Trauth. The data were then further coded according to common data categorization approaches used in the literature as previously reviewed. A model of career influences specific to the present study was then developed as will be shown as results in Chapter 5, using a career stage schema inspired by Super (1980, 1990).

The coding did not start out with *a priori* codes based on the literature. In this sense codes were derived from the data and were *in vivo* with the research.

The data was coded using features of the qualitative data analysis software, including “nodes” that represent a concept or an idea interpreted from the data to be of interest for discovering patterns in the career experiences of participants. The data were coded first to high level nodes of milestones, barriers, enablers, and outcomes to align with the research questions. The nodes were then grouped and regrouped. The first round of coding included 481 nodes that were reduced in the final round of coding to 252 nodes. Some passages were coded to multiple nodes if they related to experiences that might be associated with more than one category. For example, some experiences were described as both an enabler and a barrier to career advancement, so these would be coded to both nodes.

The analysis followed the data to establish levels of analysis that helped to discover patterns in participant responses. A **level of analysis schema** was developed categorizing barriers and enablers as either individual, family, organizational, or societal that is consistent with theory from Schein and Super. The schema including an additional layer focused on family in order to embrace a more full-life story inspired by theory from Trauth. The final round of coding, which included all cases, took the most time to complete and involved many iterations. During this round of coding, **data categories** used in other studies were evaluated to understand how they might fit the data. In this sense, the coding was more selective based on emerging themes. Individual barriers and enablers related to categories of feelings, traits, skills, values, or personal resources, such as mentors or relationships that were established outside the organization. Distinction of personal versus organizational resources is appropriate since these might be established by an individual without the support of an organization or might be associated with an organizational program or part of the organizational culture as will be explored. Family barriers and enablers relate to categories of family structure including marital relationships and family size, family culture and norms, as well as geographic home considerations, such as relocation and work related travel. Organizational barriers and enablers relate to categories of organizational results, organizational structure, culture, policy, and practices. Societal barriers and enablers related primarily to categories of stereotypes and biases in the case

region or society at large. This category would also include the influence of government programs or services provided by industry associations in the case region. These data categories were drawn principally from studies undertaken by researchers as previously referenced in the literature review and outlined in Table 1 and were used as an intermediate coding technique in that they helped in gaining a better understanding of the data. They were a checklist in the sense of open coding but they were not used in the final analysis to describe the findings. Instead the dominant themes that emerged as **career influences** - experiences, barriers, and enablers - were the central discussion topics following a stage approach.

Career theorists, such as Super (1980), Levinson (1977), and others have applied a **stage approach** to their research about careers. Most interview participants described their careers in a chronological sequence as will be explored in the Chapter 5. Typically, participants reflected on their careers by first describing their education and their upbringing. They then described the progression of organizations where they worked or jobs that they occupied. The interview script (see Appendix B) anticipated this type of chronological response but it did not specifically ask participants to start “at the beginning.” The first interview question asked participants to “describe your career in any way you want.” Data analysis followed the chronological nature of the data as collected and applied a career stage framework that is consistent with life development theory (Levinson, 1977; Super, 1980). The following career stage framework emerged as a primary category for data analysis and presentation of results:

1. Early-career (up to and including first post-secondary job).
2. Mid-career (first post-secondary job to current position).
3. Mature-career (current position).

While the career stage framework provided a foundation for the discussion of findings, a categorization schema was required to answer the primary research question that related barriers and enablers to career advancement. The categorization schema emerged from the data and in particular, the mid-career stage, where the most interview time was focused. Career experiences across the range of organizations where participants worked and the positions that they held

throughout their careers, including career advancement barriers and enablers, offered a significant volume of data in this career stage. The interviews concluded with a reflection on career outcomes that provided the data for the mature career stage analysis.

The following table summarizes the research design and illustrates the flow of data sources to intermediate data categorization that was explored at four levels of analysis, summarized into career influences as barriers or enablers to career advancement, and finally, described according to career stage.

Table 5. Research analysis framework

Data Sources	Data Category	Levels of Analysis	Career Influences	Career Stage
Interview Transcripts Resumes Profiles Socio Economic Literature ICT Sector Literature	Feelings Traits Skills Values Education Experiences Relationships Resources Structures Policies Programs Communities Cultures Results	Individual Family Organization Society	Barriers and Enablers to Career Advancement	Early-career Mid-career Mature-career

The participants generally interpreted career advancement to be the progression of their career over a period of time. The participants were not provided with a definition of "career advancement" as a criterion for their description of barriers and enablers. No participants asked for a definition or provided an interpretation of the term "career." In a few cases, participants paused to consider a definition of "career advancement" but the vast majority moved directly to describe their careers. Similarly, no definition was provided for "barriers," or "enablers." However, the terms "move forward" and "slowed down or moved backwards" were used interchangeably as part of the questioning approach. The participant responses as analyzed throughout the iterative coding process resulted in a consistent interpretation of the constructs of "career advancement," "barriers," and "enablers" as follows:

- Career Advancement: The progression of one's work experiences over time;
- Barriers: Experiences that slowed or negatively impacted career advancement; and
- Enablers: Experiences that accelerated or positively impacted career advancement.

Career advancement barriers and enablers were coded as career influences according to the level of analysis in the analysis framework. Career influences are the phenomenon of interest in the study either as barriers or enablers to career advancement. They are concepts in much the same way as Strauss and Corbin, (1998) describe a concept as a*, "…*labelled phenomenon…an abstract representation of an event, object, or action/ interaction that a researcher identified as being significant in the data." (p. 103). Other researchers broadly use the term "theme" for this purpose, as is used frequently in this study to describe career influences (Ryan & Bernard, 2003). For the purposes of this study, the label "career influences" is used as a generic reference to career advancement barriers and enablers.

Career influences were sometimes both barriers and enablers and sometimes the same career influence was a barrier for some participants while being an enabler for others. Passages were sometimes coded to more than one category and more than one concept. NVivo was used for horizontal coding that looked across all cases and sometimes discovered additional data related to a specific career influence that may not have been previously identified during the initial vertical coding that examined an interview from top to bottom. Horizontal coding was used to account for a career influence across all cases to discover patterns. NVivo text based queries were used to search the data according to key words that related to an emerging career influence theme. For example, the career influence of "networking," emerged early in the data analysis, after reviewing interview transcripts and coding them from the beginning of a transcript to the end (i.e., top to bottom). Horizontal coding was then used to explore this influence more fully across the interview data. All interview transcripts were queried for words such as "networking," or "network," or "relationships," or "old boys' network." In some

situations, this horizontal coding resulted in additional passages being coded to the career influence of “networking.” As the interpretation of “networking” became clearer, sometimes passages would be un-coded from the “networking” influence. A further illustration of this technique shows the nuanced nature of the horizontal queries used and how they contributed to a more robust analysis. For example, as data began to suggest that individual traits related to assertiveness were a career influence, a query was developed to look across all the cases for related passages that might have been missed in previous coding. The query specifically returned instances where the transcript included the words “aggressive or pushy or ‘laid back’ or quiet,” and the transcripts were then reviewed and recoded as appropriate. Other features of NVivo that were used to support cross case analysis included recording comments about the data and cross referencing with “see also” notes. A total of 40 NVivo saved queries were repeatedly run and many more ad hoc queries were run as required to support data analysis. This technique of “crisscrossing” the data to distill the career influences and identify patterns in the data was used continuously.

Once data collection was concluded and the last regional interview data were coded vertically by individual, and after all data were reviewed horizontally across cases, a final pass through the transcript data was taken to conclude the coding. No coding or un-coding was undertaken in this final step; instead, a fully interpretive frame was used to make sense of the experiences. Counting occurrences of words or phrases, or as themes or categories coded to nodes, was undertaken in order to understand the data and enable interpretation. Given that the study is exploratory and interpretive in nature, it was decided to use this quantitative data as an informal tool for analysis rather than a formal part of the research methodology. NVivo helped to provide a range of perspectives from which to interpret the many dimensions of the data and was a window in that it allowed a broad perspective to be taken across the interview transcripts and a lens in how it allowed for focus according to data attributes. Other secondary data, including case region documents and the participant’s resume or LinkedIn® profile,

were used to provide further context to the primary interview transcript data and to help with interpretation, as well as for discussion and presentation of findings.

A research journal was also used to support data analysis outside the boundaries of NVivo. The research journal consisted of a series of bound hardcopy notebooks that were used to record thoughts and interpretations of the data, as well as general comments about the study overall. The journal was separate from the data and the software qualitative data analysis tool NVivo. After most interviews, the journal was used to record impressions, often in a rambling fashion. Journal entries often ended with question marks, sometimes more than one. Questions, ideas, and comments in the journal were linked with 'see also' notes and connections were made with lines and arrows. The journal was considerably less structured than NVivo with content that would likely be difficult for anyone other than the researcher to understand. The journal allowed for more open-ended analysis that informed the dissertation, especially the discussion section. In the final analysis, data from all sources was combined in an interpretative frame to understand the career experiences and identify patterns in the barriers and enablers to career advancement of participants.

In the final analysis, a tabular format was chosen to illustrate patterns in the career influences of Canadian ICT executives as barriers and enablers to their career advancement. The tabular format chosen was similar to that used by Kirchmeyer (1998) and Wood (2006) and consistent with multi-case analysis frameworks described by Stake (2006). Career advancement barriers are denoted by the - symbol while enablers are denoted by a + symbol. Where an enabler or barrier was found for both men and women, a double ++ or -- is used if the barrier or enabler was stronger for a specific gender. One particular career influence was described as neither a barrier nor an enabler, but is considered significant as will be described. This influence was denoted with an = symbol. The tabular format is used to summarize the model of barriers and enablers to career advancement as will be developed in Chapter 5.

Table 6. Tabular format for data presentation – barrier and enabler model

Barrier		**Category**	Enabler	
Men	Women	Career Advancement Influence	Men	Women
		Individual		
		Family		
		Organization		
		Society		

Following the five coding rounds as described, career influences were interpreted and categorized as career advancement barriers or enablers (or both) first without consideration for region (see Figure 5, cases 1 to 3) and then focusing on region. Where a career influence was frequently identified and where it was described with significant intensity, it was situated in the table and categorized according to level of analysis (individual, family, organization, and society). It was then further investigated by querying the data to determine if it was described consistently or differently according to gender or region. In general, a theme emerged when it was identified by more than one participant of a particular gender and in more than one region. In other words, if two women in British Columbia and two women in Ontario identified mentorship as an enabler it emerged as a theme. In one situation, when misogynistic behaviour was described a few times during interviews, these passages were examined more closely, based on intensity of the interview narrative, however misogyny did not ultimately emerge as a theme.

Regional differences across the remaining nine cases were explored by querying the data according to region to test if a theme was evident but overlooked during initial coding rounds. If a theme was identified but was not evident in all three case regions or was not evident according to the same gender mix as the Canadian case, this was noted as a regional difference.

3.3 Validation Strategies

The trustworthiness of the research is important to maximize the credibility of findings and conclusions. This is important because individuals and organizations may undertake initiatives based, at least in part, on this study.

Government policy initiatives to increase the representation of women in ICT may reference this study. Employees and organizations in the ICT sector may reference the study. Scholars may cite the work in future research. Trustworthiness and credibility are considered interchangeable terms and are the qualitative researcher's equivalent of validity for the quantitative researcher (Carlson, 2010). An approach was developed to maximize trustworthiness and to make the study more credible principally by applying the techniques described by Carlson (2010), Creswell (2013), and Creswell and Miller (2000) including: member checking, peer debriefing, and audit trail. Triangulation was also used as will be explained.

Member checking is a process of asking study participants to review and offer feedback about the researcher's interpretation of the data (Creswell & Miller, 2000). This technique was applied in the initial phase of the study. The first eight interview participants were asked to review a summary of their career histories, which included an interpretation of the barriers and enablers to their career advancement, as well as comments and resulting themes that they offered about gender and ICT. Following initial interviews, a summary career story was emailed to them and a telephone interview was arranged where the participants were invited to add, change, or delete text that they felt to be inaccurate or did not accurately represent their story. In all cases, the feedback from these member checking events was of a cosmetic nature. For example, quotations were corrected to remove superfluous words such as "um's" and "like." Minor corrections were offered about corporate structures that provided more context but did not change the interpretation. Since detail such as names of companies were intended to be genericized in order to maintain participant anonymity, these minor corrections were generally superfluous. Some participants provided additional context for quotations. For example, in one case, a participant reflected on how a particular passage might be interpreted as "whining" or being "demanding." Acknowledging that she made the comments during the interview, she expressed concern about how being quoted verbatim might reflect on her without providing more context. When the anonymous nature of the study was clarified, the participant re-affirmed the passage as captured in the career history summary. In another case, a

participant offered written feedback that provided additional examples and arguably enriched the data but this did not change the resulting analysis and so this additional data was not used.

In the second phase of data collection, this single-event based, formal member checking approach (Carlson, 2010) was replaced by a more continuous process. Summaries of what was being said during the interview were played back to the participant throughout the interview and at the conclusion. Throughout the semi-structured conversational interview, participants were asked something like, “So if I hear you correctly….” Reflecting on the overall interview, participants were asked to add, change, or delete comments at the conclusion of the interview. In a few cases, participants added a point or two, generally to acknowledge an individual they might not have mentioned in the interview. Sometimes this was a family member or a mentor. Sometimes this was to “soften” a career episode that had been described with particular intensity. This more pragmatic process of continuous validation replaced member checking in the second study phase.

Peer debriefing is another technique used to establish research trustworthiness and involves reviews of the data and the research process by individuals who are familiar with the research yet external to the study (Creswell & Miller, 2000). This was accomplished with three collaborators: the transcriptionist research assistant, a member of the Dissertation Committee, and a management consultant associated with the sponsoring organization, Digital Nova Scotia, who was also a partner at the company co-funding the grant program (see also Acknowledgements and Appendix A). A series of informal peer debriefings were conducted where samples of interpreted results were discussed. Two of these were formal coding reviews, others were informal discussions of emerging findings. In all cases, these peer debriefings validated analysis to that point.

A research audit trail is generally considered to be a means by which another researcher could trace the steps taken in order to arrive at study conclusions (Shenton, 2004). The methodical approach previously described and the availability of the NVivo database through which such a trace could be undertaken suggests that the present study includes a reasonable audit trail. Effort

was taken to follow the data and the procedure by which this was accomplished is captured in NVivo as evidenced in the way folders were structured and nodes were described. Each of the coding rounds is supported by a folder that could be used to trace the evolution of the data analysis. Although the research journal might not be easily understood by another researcher, descriptions of coding nodes in NVivo were used with reasonable consistency, such that the contents of a node could be understood by another researcher.

Data triangulation involves comparing the results of two or more data sources or research methods in order to find patterns of convergence (Mays & Pope, 2000). The present study applies a methodology that involves multiple data sources including 48 interviews across three regions. Data collection intentionally did not stop when some patterns were evident and saturation was achieved (Fusch & Ness, 2015). Instead, the methodological approach required that data collection continue in order to secure the target number of interview participants. The number of cases explored balances a pragmatic approach with a reasonably rigorous approach and in this sense data triangulation techniques were applied. This combination of member checking, continuous validation, peer debriefing, audit trail, and data triangulation served to increase the trustworthiness of the study.

3.4 Summary

The study seeks to understand patterns in the career experiences, including barriers and enablers to career advancement, of ICT men and women leaders from three regions of Canada in order to inform individuals and organizations about how to improve the representation of women. A pragmatic approach was taken including study sponsorship by the industry association, Digital Nova Scotia, which leveraged its relationship with similar organizations across Canada. A multiple case study methodology was followed in two phases in three geographic regions. Qualitative data were collected from multiple sources consisting principally of interviews with ICT executives along with secondary data sources. A framework for analysis emerged from the data including categories and levels that were then explored relative to a literature review.

Analysis was undertake using NVivo qualitative data analysis software, QSR International Pty Ltd. Version 11. Many of its features were used extensively in order to identify career experience patterns according to a range of attributes including region and gender. Validation strategies included member checking, continuous validation, peer debriefing, attention to audit trail, and some triangulation. Chapter 4 includes descriptions of the individuals and the regions involved in the study.

CHAPTER 4 CASES

This chapter describes the cases and provides relevant context for the analysis and exploration of career patterns in order to answer the research questions. The case region descriptions are followed by summary tables of participant demographic data by region. The descriptions include: an introduction, geographic and economic background, population and workforce demographics, ICT sector highlights including representative organizations, education system characteristics, and references to ICT sector councils. Two fictitious career stories for a typical male and female participant are also provided based on a composite of the interview data. This chapter provides important context to the dissertation.

4.1 Canada

Canada is a country located in the northern half of North America consisting of ten provinces that stretch from the eastern Atlantic coast to the western Pacific coast and three northern territories. Canada spans roughly 10 million square kilometres and has one of the ten largest economies in the world. It is a member of the Group of 7 (G7) nations albeit with the smallest population at 35,457,000 (NationMaster, 2016). Canada's population is illustrative of a strong historic influence of both the French and the British, which accounted for about half the population in 1996, as well as a diverse "third force" of non-British and non-French accounting for the other half (Li, 2000, p. 10). Canada's workforce consisted of 16,595,035 in 2011 and of this number, 48% are women (Statistics Canada, 2014).

The Government of Canada describes the nation's economy as including three main types of industries: services industries (which make reference to communications); manufacturing industries (which make reference to high technology); and natural resource industries (Citizenship and Immigratation Canada, 2012). The Canadian Information and Communications Technology (ICT) sector is an important and growing part of the overall Canadian economy. In 2016, the ICT sector contributed close to $73 billion or 4.4% of Canada's gross domestic product and employed over 800,000 people in Canada (ICTC, 2016a). Between 2001 and 2015, output and employment growth in the ICT sector consistently

outpaced the overall Canadian economy. Unemployment rates are lower in ICT than the Canadian average (ICTC, 2015b). The ICT sector is considered to be strategic for Canada and is touted by government as offering “transformational” benefits for the nation due largely to how technology enables productivity and innovation across sectors (Industry Canada, 2014).

Tracking individual companies in the Canadian ICT sector can be challenging since the sector is made up of both privately and publicly owned companies, many of which are multi-national. Over the past 15 years an independent consulting company, Branham Group, has measured and analyzed the ICT sector in Canada producing an annual report card which is publicly available through its website. The ICT workforce in Canada is employed in both Canadian owned and multinational companies. Table 7 ranks multinational ICT companies operating in Canada according to 2015 revenue as tracked by Branham Group. The companies where study participants worked are not disclosed in this research. This list reasonably represents the types of firms where they may have been employed in their careers.

Table 7. Top 25 ICT multinational companies operating in Canada

Rank 2015	Rank 2014	Company Name	City	Province
1	1	IBM Canada	Markham	ON
2		Alphabet (Google)	Toronto	ON
3	2	HP Canada	Mississauga	ON
4	3	Cisco Systems Canada	Toronto	ON
5	4	Microsoft Canada	Mississauga	ON
6	6	General Dynamics Canada	Ottawa	ON
7	5	Oracle Canada	Mississauga	ON
8	7	Honeywell Canada	Mississauga	ON
9	9	SAP Canada	Toronto	ON
10	8	Xerox Canada	North York	ON
11	10	Wipro	Mississauga	ON
12	11	CDW Canada	Toronto	ON
13	12	Amdocs	Mississauga	ON
14	13	ADP Canada	Toronto	ON
15	14	Alcatel-Lucent Canada	Ottawa	ON
16	16	Randstad Technologies	Toronto	ON

17	15	Hitachi	Mississauga	ON
18	17	Fujitsu Canada	Toronto	ON
19	18	Pitney Bowes	Toronto	ON
20	19	Teledyne Technologies	Waterloo	ON
21	20	Symantec Canada	Toronto	ON
22	21	CSC	Ottawa	ON
23	23	CA Technologies Canada	Toronto	ON
24	24	SunGard	Toronto	ON
25	25	Microsemi (formally PMC-Sierra)	Burnaby	BC

(Source: Branham Group, 2016c)

The Canadian provinces where these multinational companies are headquartered demonstrates the centralized nature of the ICT sector and the dominance of central Canada in the industry. Of the top ranked ICT, multi-national companies operating in Canada, according to Branham, none are headquartered in the case regions of this study. However, many of the Branham top ranked ICT multi-national companies have offices and employees that are located across Canada, including in the case regions referenced for this research.

Labour market information about what is now the Canadian ICT sector was first collected in 1961 when the Canadian Census introduced the occupation of “Computer Programmer.” (Gagnon, et al., 2003). There were 784 computer programmers in Canada at that time. Over the more than 55 years since ICT labour market information was collected in Canada, technology has evolved dramatically and the sector now consists of 816,200 women and men. The average age of participants in this study is 50.5 years, thus the ICT sector in Canada has grown in the range of 100,000% within their lifetimes.

The dramatic growth of the ICT sector has required changes in classification schemes used for statistical purposes over the years. From the single occupation code of Computer Programmer used in 1961, to the 2011 Canadian Census there have been consistently more occupation codes introduced in order to track and understand the changing sector. This makes it challenging to compare labour market information from year to year. The Software Human Resource Council was arguably the first sector council for ICT in Canada and focused largely on

supporting human resource strategies for the ICT sector until 2006 (Government of Canada, 2016a). Since that time, the Information Communications and Technology Council of Canada, has worked with a similar mandate that includes tracking ICT labour market information. The two organizations have produced a range of statistical reports about the sector and its workforce. For the purposes of this study, the definition of the ICT sector and related labour market information includes current (as of 2015 per Table 8 below) and historical Statistics Canada classification codes as used by these two organizations.

Table 8. ICT occupations for the purpose of this study

Code	National Occupational Classification Labels
0131	Telecommunication Carriers Managers
0213	Computer and Information Systems Managers
2133	Electrical and Electronics Engineers
2147	Computer Engineers (except Software Engineers and Designers)
2171	Information Systems Analysts and Consultants
2172	Database Analysts and Data Administrators
2173	Software Engineers and Designers
2174	Computer Programmers and Interactive Media Developers
2175	Web Designers and Developers
2241	Electrical and Electronics Engineering Technologists and Technicians
2281	Computer Network Technicians
2282	User Support Technicians
2283	Information Systems Testing Technicians
5224	Broadcast Technicians
5241	Graphic Designers and Illustrators

(Source: Statistics Canada, 2011a)

The Canadian ICT workforce is changing in several ways. Today, it is older, better educated, and more multi-cultural. Between 2001 and 2015 the number of ICT workers who are over the age 55 grew almost threefold. In the same period, the number of ICT workers in Canada with a Bachelor's degree increased from 44% to 52% and the number of ICT workers born outside Canada increased from 28% to 37% (ICTC, 2015b). One aspect of the Canadian ICT sector that does not appear to be growing is the participation rate of women, which has consistently been declining.

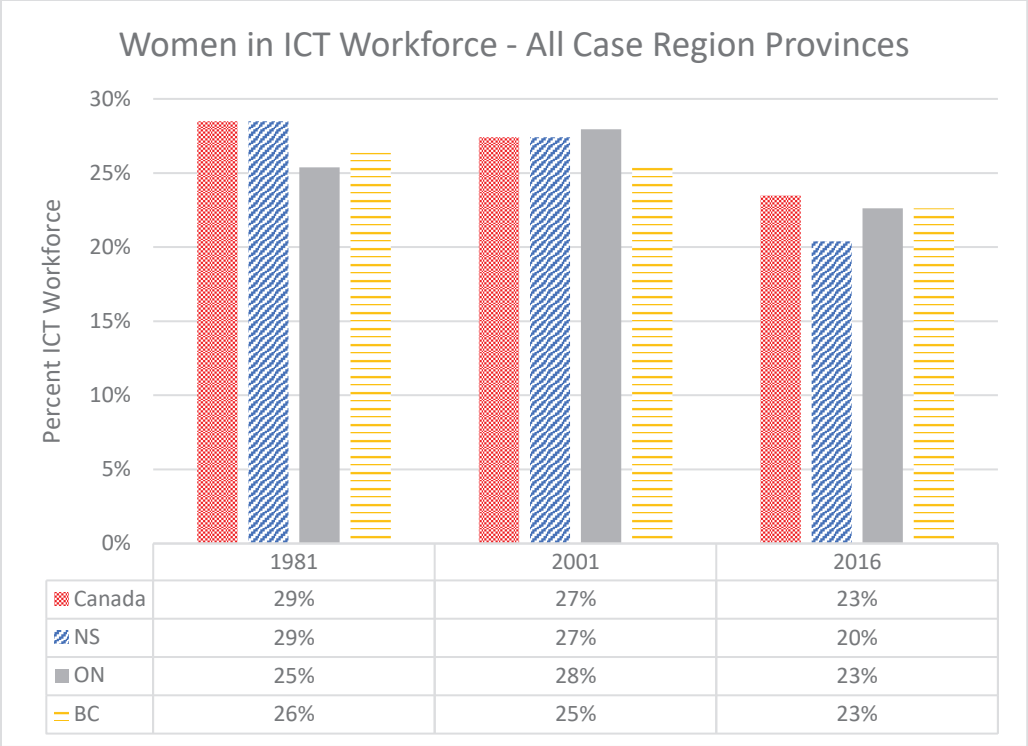


Figure 3. Representation of women in ICT (Case regions).

The participation rate for women for the purposes of this study is the number of women as a percentage of the overall workforce and was lowest at 15% when IT occupations were first recorded in the 1961 Canadian census (Gagnon et al., 2003). So arguably, there was an increase in the representation of women during the initial years of the sector's history. Between the 1961 and 1971 census years, the sector's female workforce increased to 29% but the representation of women has been declining ever since. In light of this decline, The Information Technology Council of Canada, together with seven provincial partner ICT organizations from across Canada, were involved in an initiative to increase the representation of women in the ICT sector, which was funded by the Government of Canada. The three case regions for this study also participated in this initiative.

Table 9 on the following page provides demographic data of the study participants at the Canadian level. Additional tables showing regional demographics are included later in this chapter and referenced throughout.

Table 9. Canadian participant demographics

	Canada					
	Total		Men		Women	
Demographic Information						
Age (Median)	52		53		49	
Family Background						
Single	2	4%	0		2	8%
Married	39	81%	23	96%	16	67%
Divorced (not remarried)	7	15%	1	4%	6	25%
No Children	5	10%	0		5	21%
Mean Number of Children	2.0		2.2		1.8	
Born Atlantic Canada	16	33%	9	38%	7	29%
Born Central Canada	15	31%	7	29%	8	33%
Born Western Canada	7	15%	5	21%	2	8%
Born USA	3	6%	1	4%	2	8%
Born Europe	5	10%	2	8%	3	13%
Born Asia	2	4%	0		2	8%
Born In Case Region Area	38	79%	21	88%	17	71%
Born Outside Case Region Area	10	21%	3	13%	7	29%
Education						
No Post Secondary	3	6%	0		3	13%
Mixed Post Secondary	10	21%	3	13%	7	29%
Technical Degrees (per person)	1.0		1.0		0.9	
Non-Technical Degrees (per person)	0.6		0.5		0.7	
Total Degrees (per person)	1.6		1.6		1.6	
Job Title						
President/ CEO	10	21%	6	25%	4	17%
CIO/ Vice President	23	48%	13	54%	10	42%
Director/ Senior Manager	15	31%	5	21%	10	42%
Career History						
Organizations Worked (Mean)	4.9		4.7		5.1	
Non-ICT Organizations Worked (Mean)	1.5		1.3		1.8	
Positions Held (Mean)	8.9		8.8		9.0	
Non-ICT Positions Held (Mean)	1.5		1.3		1.8	
Lived and Worked Only in Region	17	35%	8	33%	9	38%
Assignments Lived Other Canada (per person)	0.88		1.04		0.71	
Assignments Lived USA (per person)	0.19		0.21		0.17	
Assignments Lived Rest of World (per person)	0.19		0.13		0.25	

Note: Some percentages in the table may not add to 100% due to rounding.

Based on a blend of data presented in this chapter and based on interview data results to be presented in Chapter 5, the following are two **high level fictitious career summaries** of typical Canadian ICT executive men and women as they might have been described in interviews. Any organization, school, or location names are used for illustration only. These summaries do not reflect the richness of data obtained from the interviews but do capture the essence of the stories told. Some themes to be discussed in Chapter 6 are evident in these summaries that are offered as context to the remaining dissertation:

Fictitious Male Participant: *I attended Waterloo and studied engineering although I wasn't sure where that would take me. I got an MBA a bit later. I was born in Atlantic Canada and my parents moved to Ontario where I got my first job in ICT out of the Coop Program. I was active in school but I never really thought much about my career then. I started at (ICT Company) and my career progressed quite quickly. I got tapped on the shoulder for opportunities regularly. It felt like I was being groomed for management from the start and when I got my promotion to managing managers I knew I was in the fast lane. Soon after that we had our second kid and then moved to Calgary. That's when my wife gave up her job for a while. Until then the travel had been brutal because I had a national mandate.*

One day I got a call from a buddy who had taken a job at (ICT Company) telling me about a senior level opportunity based on a new acquisition so I gave the exec a call and he hired me pretty quickly. The travel there was even worse and although I was earning great money as a VP the pressure at home was bad. I turned down another job involving travel and I knew my days there were numbered so I quit and we moved back to Ontario where I hung out my own shingle as a management consultant even though it wasn't in the tech sector. After a while I called another buddy who had been hired at (ICT Company). He said good things so I went through their selection process for another VP position. Not long after that the bottom fell out at (ICT Company) so I moved over to this young start-up.

My network and the relationships I developed were key to my advancement. I always felt like I fit in and got along well with people. I'm a good communicator in addition to my technical skills. My results have always been strong and I have a track record so people know they can count on me which is important. I've also had some good mentors who taught me the ropes. Policy? Yea, well it keeps you out of jail but it's never really had much influence on my career other than the leadership development program and the relocation financial support but those aren't offered anymore. It's who you know and what you make of it. That's what I tell my kids and young people I mentor now.

Overall, I've had a great run with some amazing people. I'm super lucky to have had big jobs at great companies but I wish I got in on the start-up thing earlier. I don't really have any regrets. This interview has been great for me. I never really paused to think about my career and how it has evolved. I kind of wish that I had. My career may not have been very well planned but it sure turned out great.

Fictitious Female Participant: *I attended Waterloo and studied engineering where I was one of only a few women in my class. In high school I was a great student but like with many girls my age, the guidance counsellor suggested I go into nursing. People laughed when I told them I wanted to study engineering but I was determined. I got a job at (ICT Company) straight out of the Co-op Program. The guy I worked for liked the fact that I was technical but could also relate to people. I helped him to solve business problems. He could always count on me and he helped me a lot as a mentor and I'm pretty sure he spoke up for me in two promotions. When I was promoted from Program Manager to Director it was a big deal because I was the first woman in that role. It was a significant position and highly visible internally and externally. I went to a lot of technical conferences and was typically the only woman in the room. Since I was the only woman of four Directors at my level the numbers worked out well because I don't play golf and the other three Directors and our boss the VP would disappear weekly for a round without me. I was left out. That really bugged me. But, it is what it is.*

My husband was a teacher and my job involved a lot of travel so our first-born child travelled with me quite regularly. When our daughter was born, Dad became full time Mr. Mom until we divorced. Thankfully my parents didn't live far away so they could help with the kids. After a post Y2K restructuring the department I was in got eliminated so I was out of job which was fine with me. The travel was tough. I interviewed for a job at (ICT Company) in Toronto and was surprised the all-male panel interviewers selected me. You know, the old adage, "men hire other men." In the new job I wound up earning a lot more money. I always knew I was underpaid at (ICT Company) but never had the confidence to argue my case. Besides, I didn't want to play the gender card or appear to be too bitchy.

Despite earning more money I felt my work wasn't appreciated at (ICT Company). I fit in fine and got along well with everyone but I remember a few times where I knew I was doing better than my colleague yet he got noticed and I didn't. That bugged me and so I quit and started to do some consulting which was good but not that steady. After a bit I applied for work with (ICT Company) who had acquired a company and were growing. A head hunter contacted me and since I had all the qualifications I felt good about my chances. (ICT Company) and all the places I worked had good management development programs and I was keen to get back into a program like that so I could keep building my leadership skills. It's probably the only HR type program that has influenced my career. Now I'm a Senior Director in a role I enjoy, and working closer to home. It's all good.

I've been very fortunate throughout my career. Yes it's been a bit tough being the only women and everything that comes with that but I've been blessed to have had a chance to work with great people and develop others. Now I also mentor other women. It's a way of giving back that I enjoy. I tell young women in ICT to persevere through the tough times and to focus on relationships and results. That's what I hope for my kids too. My only regret is not spending as much time with them as I could have but, come to think of it, I imagine they're proud of me and they look up to me for the big jobs I've had so it's been worth it. I really enjoyed this interview. It's made me think. It's helped me realize just how fortunate I have been throughout my career.

These fictitious accounts of career stories are representative of what was shared during interviews. They are aggregated at the Canadian level using a blend of data sources. Similar accounts are not provided at the regional level. The following data for each of the three case regions provide context for the remainder of the dissertation and are specifically referenced in several sections.

4.2 Halifax, Nova Scotia

Figure 4. Map of Canada: Halifax.

Nova Scotia is on the east coast of Canada and is one of the four Atlantic Canadian provinces, which together account for about 6.6% of Canada's population. With 947,000 residents in 2016, Nova Scotia represents about 2.6% of Canada's population (Statistics Canada, 2016a). Halifax is located near the geographic centre of the province and is a port city, thus a shipping link to overseas markets. The Halifax Regional Municipality was created through amalgamation of the county of Halifax and the cities of Halifax, Dartmouth, and Bedford in 1996. Halifax is Nova Scotia's capital and its largest city. With a population of 417,847, it is home to about 44% of the province's residents (Statistics Canada, 2016a). Nova Scotia's population has been stagnant recently and is acknowledged as a significant economic development challenge (Ivany, 2014, p. 1v). Nova Scotia's workforce was 435,595 in 2011 and of this number, 49% were female (Statistics Canada, 2013).

Nova Scotia's economy has traditionally been linked to shipbuilding, shipping, and fisheries (Beck, Foot, James-Abra, & McIsaac, 2015). In 2016, the Government of Canada cited ICT as one of Nova Scotia's sector strengths, along with Ocean Technology, Seafood, Agri-Food, Natural Resources, Aerospace and Defense, Financial Services, Digital Media, and Film and Television Production. ICT was also listed as a sector strength of Halifax, along with Financial Services,

Oceans, Transportation and Logistics, and Aerospace and Defense. Halifax was touted by the Government of Canada as the home of “some of the world’s most recognizable” ICT companies including IBM, CGI, CISCO, Bell Aliant, and NTT Data (Canadian Trade Commissioner Service, 2016a).

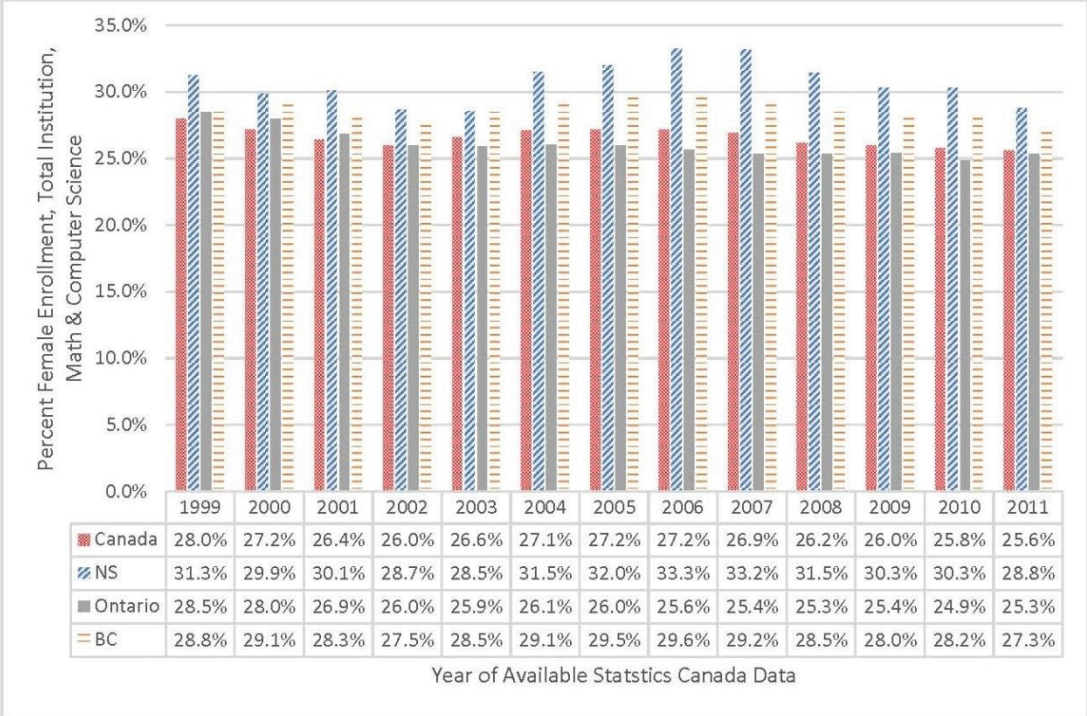
Of the top ICT companies in Canada, Halifax-based Mobia Technology Innovations, which is an IT services firm, is the first company from Nova Scotia to make the Branham Top 250 list and it was ranked at number 127 (Branham Group, 2016a). Of the top 25 up and coming ICT companies, based on creativity and innovation, only one, Zora, is headquartered in Halifax (Branham Group, 2016b). Otherwise, the Branham300 Report on Canada’s leading ICT companies contains few references to Halifax or Nova Scotia. The Nova Scotia provincial government outsourced much of its ICT services to IBM in 2015, which influenced IBM’s decision to establish an Analytics Centre in Halifax (Jackson, 2012). CGI and MTT Data also have development centres in Halifax.

Nova Scotia is home to 10 universities and 13 community college campuses and has the highest ratio of educational facilities to population in Canada (EduNova, 2016). The province also promotes that one in three people over the age of 25 in the province have a university degree (Canadian Trade Commissioner Service, 2016b). Nova Scotia was ranked behind the Canadian average and behind both Ontario and BC in the Conference Board of Canada rankings for education and skills. Nova Scotia ranked highest among Canadian provinces on the Board’s graduates in Science, Math, Computer Science measure; however, it was below the Canadian average and behind Ontario on the gender gap measure (Conference Board of Canada, 2016).

Dalhousie University is the largest post-secondary school in Nova Scotia by student enrollment and its Faculty of Computer Science is also the largest (Dalhousie University, 2016a). The Dalhousie University Faculty of Computer Science promoted the Women in Technology Society on its website in 2016 (Dalhousie University, 2016b).

Figure 5 shows women as a percentage of overall enrollment in math, computer and information sciences at post-secondary institutions in the three

provinces of the study case regions (Statistics Canada, 2011b). Nova Scotia has consistently had the highest enrollment of women in these ICT-related disciplines.



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Canada	28.0%	27.2%	26.4%	26.0%	26.6%	27.1%	27.2%	27.2%	26.9%	26.2%	26.0%	25.8%	25.6%
NS	31.3%	29.9%	30.1%	28.7%	28.5%	31.5%	32.0%	33.3%	33.2%	31.5%	30.3%	30.3%	28.8%
Ontario	28.5%	28.0%	26.9%	26.0%	25.9%	26.1%	26.0%	25.6%	25.4%	25.3%	25.4%	24.9%	25.3%
BC	28.8%	29.1%	28.3%	27.5%	28.5%	29.1%	29.5%	29.6%	29.2%	28.5%	28.0%	28.2%	27.3%

Figure 5. Women in Post-Secondary Math, IT, and Computer Science in University. (Source: Statistics Canada, 2011b)

Digital Nova Scotia (DNS) is the provincial ICT industry association that provides advocacy and other support services to its members. DNS was originally established in 1989 as the Software Industry Association of Nova Scotia and later became the Technology Industry Alliance of Nova Scotia. Its base of operations has always been located in Halifax (Digital Nova Scotia, 2016). DNS was one of seven partners in a national program to increase the representation of women in the ICT sector that was funded by the Government of Canada between 2013 and 2016. The ICT workforce in Halifax included 9,645 workers in 2011 and just under 20% were women. By comparison, Nova Scotia's ICT sector consisted of 13,545 workers with women representing just over 20% of those workers in 2011 (Statistics Canada, 2013). Table 10, on the following page, provides a more complete account of Halifax study participant demographics.

Table 10. Nova Scotia participant demographics

	Nova Scotia					
	Total		Men		Women	
Demographic Information						
Age (Median)	53		53		48	
Family Background						
Single	1	6%	0		1	13%
Married	15	94%	8	100%	6	75%
Divorced (not remarried)	1	6%	0		1	13%
No Children	2	13%	0		2	25%
Mean Number of Children	1.9		2.3		1.5	
Born Atlantic Canada	13	81%	7	88%	6	75%
Born Central Canada	0		0		0	
Born Western Canada	1	6%	0		1	13%
Born USA	1	6%	1	13%	0	0%
Born Europe	1	6%	0		1	13%
Born Asia	0		0		0	
Born In Case Region Area	13	81%	7	88%	6	75%
Born Outside Case Region Area	3	19%	1	13%	2	25%
Education						
No Post Secondary	2	13%	0		2	25%
Mixed Post Secondary	1	6%	0		1	13%
Technical Degrees (per person)	0.8		0.8		0.9	
Non-Technical Degrees (per person)	0.6		0.5		0.6	
Total Degrees (per person)	1.4		1.3		1.5	
Job Title						
President/ CEO	3	19%	3	38%	0	0%
CIO/ Vice President	8	50%	3	38%	5	63%
Director/ Senior Manager	5	31%	2	25%	3	38%
Career History						
Organizations Worked (Mean)	4.9		4.8		5.1	
Non-ICT Organizations Worked (Mean)	1.8		1.8		1.8	
Positions Held (Mean)	8.9		8.8		9.0	
Non-ICT Positions Held (Mean)	1.8		1.8		1.8	
Lived and Worked Only in Region	5	31%	3	38%	2	25%
Assignments Lived Other Canada (per person)	1.00		1.00		1.00	
Assignments Lived USA (per person)	0.31		0.38		0.25	
Assignments Lived Rest of World (per person)	0.25		0.13		0.38	

Note: Some percentages in the table may not add to 100% due to rounding.

4.3 Waterloo Region, Ontario

Figure 6. Map of Canada: Waterloo

The province of Ontario is located in central Canada. It is the largest province by population with about one third of the national population and is home to Canada's capital city of Ottawa. Toronto is Canada's largest city and thus the largest in Ontario by workforce size, accounting for 20% of Ontario's 6,297,000 workers in 2011. The Regional Municipality of Waterloo is in close proximity to Toronto, at a distance of about 100 kilometers. Located in Southern Ontario, the Waterloo region consists of three cities, sometimes referred to as the Tri-Cities, namely Kitchener, Cambridge, and Waterloo. The region also includes a few smaller townships. The population of The Waterloo region was 507,096 in 2011 (Statistics Canada, 2013). The region has experienced significant population growth in part based on the growth of nearby Toronto. Immigrants accounted for 22% of the total Waterloo population according to the 2006 Census. The Waterloo workforce consisted of 263,815 in 2011 of which 48% were women (Statistics Canada, 2013).

The government of Canada in 2016 cited IT as one of Ontario's sector strengths along with: aerospace, automotive, chemicals, cleantech, defence, financial services, food, life sciences, manufacturing, mining, and tourism. Information and Communications Technology was also listed as a sector strength of the Waterloo region along with: quantum and nanotechnology, advanced manufacturing, business and financial services, and food processing. Waterloo was touted as the home of over 1,000 technology companies, having a high ICT start-up survival rate, and having a patent per capita rate of double the Canadian average (Government of Canada, 2016b). The top ICT businesses operating in the Waterloo region, as listed in 2016 by the Waterloo Region Economic Development Corporation include: Blackberry, Christie, D2L, Google, OpenText, Descartes,

Teledyne DALSA, and SAP (Waterloo Region Economic Development Corporation, 2016).

Of the top ICT companies in Waterloo, ranked by 2015 revenue according to the Branham Group, the five largest are headquartered in Kitchener or Waterloo and are: Blackberry, a wireless solutions company that is ranked 6th in Canada; OpenText, an enterprise software company that is ranked 8th in Canada; Descartes System Group, a logistics applications company that is ranked 41st in Canada; RDM, an electronic payments company that is ranked 112th in Canada; and Enflick, a mobile phone services company, that is ranked 124th in Canada (Branham Group, 2016a). These rankings do not include national or multi-national companies with a workforce in the Waterloo region. Of the top 25 up and coming ICT companies, based on creativity and innovation as reported by Branham, four are based in the Kitchener-Waterloo region compared to two for Vancouver/Victoria, and one for Halifax (Branham Group, 2016b).

The University of Waterloo and Wilfred Laurier University, as well as Conestoga College are post-secondary schools in the region. Waterloo is often acknowledged as a hub for the Canadian high technology sector and the University of Waterloo is recognized as the birthplace of Research in Motion which is considered by many as a Canadian high tech success story (Roose, 2015). The University of Waterloo is tied with the University of British Columbia at second place in the top rankings of Canadian Computer Science universities according to MacLean's Magazine (Schwartz, 2016). Waterloo promoted a focus on women in Computer Science on its website in 2016 (Cheriton School of Computer Science, 2016) and Wilfred Laurier promoted a Centre for Women in Science (Wilfred Laurier University, 2016).

Communitech is an industry-led innovation centre that supports the technology sector in the Waterloo Region and offers a range of services to large and small ICT companies in order to grow the sector and its workforce. Communitech was listed by the Waterloo Region Economic Development Corporation as one of seven business and technology initiatives to "further the development of technologies within this rich ecosystem." (2016). Communitech

was also one of seven partners in a national program to increase the representation of women in the ICT sector that was funded by the Government of Canada between 2013 and 2016.

The ICT workforce in Ontario consisted of 317,990 in 2011 and of this number, 25% were women. By comparison in the same period, the Toronto ICT workforce was the largest in Canada at 83,205 and 25% of them were women (Statistics Canada, 2013). Due to the proximity of Waterloo and Toronto, some Waterloo residents working in the ICT sector would probably commute to work at companies located in Toronto and vice versa; thus, workforce demographics across the two cities can be misleading. The Waterloo Region Economic Development Corporation claimed on its website (2016) that 30,000 employees work at ICT companies in the region. The ICT workforce in the Waterloo Region according to the Canadian census included 15,565 workers in 2011 and of this number, 23% were women (Statistics Canada, 2013).

The study participants from the Waterloo Region reported a median age of 48 years with women slightly younger. None were single and with only one described as divorced, the region had the highest number of married participants and the highest number of children per participant although only by a small margin. Twelve of the 16 participants were born in the case region area but Waterloo participants were also most likely to have lived and worked outside the region compared to other regions (n=12/16).

Participants from Waterloo had the highest number of technical degrees per person overall, as well as by gender. They also had the lowest number of non-ICT jobs during their careers. This profile of participants is consistent with how some have described the region as Canada’s equivalent to Silicon Valley in the United States. Table 11, found on the following page, provides a more complete account of the Waterloo region study participant demographics.

Table 11. Ontario participant demographics

	Ontario					
	Total		Men		Women	
Demographic Information						
Age (Median)	48		51		48	
Family Background						
Single	0		0		0	
Married	15	94%	8	100%	7	88%
Divorced (not remarried)	1	6%	0		1	13%
No Children	0	100%	0		0	100%
Mean Number of Children	2.1		2.3		1.9	
Born Atlantic Canada	1	6%	1	13%	0	0%
Born Central Canada	12	75%	6	75%	6	75%
Born Western Canada	0		0		0	
Born USA	1	6%	0		1	13%
Born Europe	1	6%	1	13%	0	
Born Asia	1	6%	0		1	13%
Born In Case Region Area	12	75%	6	75%	6	75%
Born Outside Case Region Area	4	25%	2	25%	2	25%
Education						
No Post Secondary	0		0		0	
Mixed Post Secondary	5	31%	1	13%	4	50%
Technical Degrees (per person)	1.2		1.3		1.1	
Non-Technical Degrees (per person)	0.5		0.4		0.6	
Total Degrees (per person)	1.7		1.6		1.8	
Job Title						
President/ CEO	2	13%	0		2	25%
CIO/ Vice President	11	69%	8	100%	3	38%
Director/ Senior Manager	3	19%	0		3	38%
Career History						
Organizations Worked (Mean)	4.4		4.1		4.8	
Non-ICT Organizations Worked (Mean)	1.3		0.9		1.8	
Positions Held (Mean)	8.6		8.8		8.4	
Non-ICT Positions Held (Mean)	1.3		0.9		1.8	
Lived and Worked Only in Region	4	25%	0	0%	4	50%
Assignments Lived Other Canada (per person)	0.88		1.25		0.50	
Assignments Lived USA (per person)	0.13		0.13		0.13	
Assignments Lived Rest of World (per person)	0.06		0.13		0.00	

Note: Some percentages in the table may not add to 100% due to rounding.

4.4 Vancouver and Victoria, British Columbia

Figure 7. Map of Canada: Vancouver.

British Columbia (BC) is Canada's western most province located between the pacific coast and the Rocky Mountains. It is the fourth largest of Canada's 10 provinces with a population of about four million people. Vancouver is the largest city in BC by population (Statistics Canada, 2016b). Victoria is located on Vancouver Island and is in close proximity to the city of Vancouver. Victoria is the provincial capital and thus, a focus of attention for ICT product and service providers, many of which have employees located in Vancouver. The BC workforce included 2,171,470 workers in 2011 and 48% of them were women. Vancouver and Victoria accounted for 63% of the overall provincial workforce in the same period (Statistics Canada, 2013).

The provincial economy has traditionally been influenced by natural resources, including forestry and mining. As the western end point of Canada, Vancouver is also an important seaport and centre for international trade. BC's economic focus on resource extraction and the ICT sector is evidenced by its largest private sector employers (ranked by revenue). These include: Telus Corp. (Telecommunications), Teck Corp (Mining) Canfor (Saw Mills) Corp., and West Fraser Timber (Pulp and Paper) according to BCBusiness (2016). The provincial government has outsourced a range of services, including many IT functions, which has influenced the ICT sector in Vancouver/Victoria, including the creation of alternative ICT business models and new businesses. In Victoria/Vancouver, Telus, IBM, HP, and EDS are among the organizations awarded outsourcing arrangements with the BC provincial government (Sutton, 2004). Of the top ICT companies in BC, according to Branham Group ranked by 2015 revenue, the five largest headquartered in Vancouver and Victoria are: Telus, a wireless and internet

company, ranked second in Canada; Avigilon, a surveillance solutions company, ranked #28 in Canada; iQmetrix, a retail software company, ranked #52 in Canada; Absolute Software, an IT asset management company, ranked number 56th in Canada; Vecima Networks, a broadband solutions company, located in Victoria and ranked 65th in Canada (Branham Group, 2016a). These companies do not include national or multi-national companies with a workforce in Vancouver and Victoria.

BC was the top performing province for education and skills according to the Conference Board of Canada rankings. The benchmarking methodology applied by the Conference Board includes 23 indicators across three levels of education. The post-secondary indicators include a measure of the gender gap in education attainment, as well as a measure of science engineering and math graduates. BC ranks below the Canadian average on both of these measures (Conference Board of Canada, 2016). There are 13 universities in BC and 11 of these are located in Vancouver and Victoria. The University of British Columbia (UBC) in Vancouver and The University of Victoria have the highest enrollments in each of the two cities respectively. In 2016, both UBC and the University of Victoria Computer Science departments promoted women in Computer Science on their websites (University of British Columbia, 2016; University of Victoria, 2016).

The ICT workforce in the province included 76,505 workers in 2011 of which 23% were women (Statistics Canada, 2013). The ICT workforce in Vancouver and Victoria accounted for 83% of the provincial ICT workforce and consisted of 55,015 workers and 23% of them were women. Victoria is a small portion of the Vancouver/Victoria case region, consisting of 8,590 workers in 2011 with 23% being women. The integration of the ICT communities in both locations and the availability of participants from both cities were factors in combining them for this study. Vancouver and Victoria are the largest regional case in the study by workforce size. Seventy-five percent of the study participants from BC were located in Vancouver. Table 12, found on the following page, provides a more complete account of the Vancouver and Victoria region participant demographics.

Table 12. British Colombia participant demographics

	British Columbia					
	Total		Men		Women	
Demographic Information						
Age (Median)	52		48		53	
Family Background						
Single	1	6%	0		1	13%
Married	10	63%	7	88%	3	38%
Divorced (not remarried)	5	31%	1	13%	4	50%
No Children	3	19%	0		3	38%
Mean Number of Children	1.7		2.0		2.2	
Born Atlantic Canada	2	13%	1	13%	1	13%
Born Central Canada	3	19%	1	13%	2	25%
Born Western Canada	6	38%	5	63%	1	13%
Born USA	1	6%	0	0%	1	13%
Born Europe	3	19%	1	13%	2	25%
Born Asia	1	6%	0		1	13%
Born In Case Region Area	6	38%	5	63%	1	13%
Born Outside Case Region Area	10	63%	3	38%	7	88%
Education						
No Post Secondary	1	6%	0		1	13%
Mixed Post Secondary	4	25%	2	25%	2	25%
Technical Degrees (per person)	0.9		1.1		0.8	
Non-Technical Degrees (per person)	0.6		0.8		0.8	
Total Degrees (per person)	1.6		1.9		1.5	
Job Title						
President/ CEO	5	31%	3	38%	2	25%
CIO/ Vice President	4	25%	2	25%	2	25%
Director/ Senior Manager	7	44%	3	38%	4	50%
Career History						
Organizations Worked (Mean)	5.3		5.3		5.4	
Non-ICT Organizations Worked (Mean)	1.4		1.1		1.8	
Positions Held (Mean)	9.3		9.0		9.5	
Non-ICT Positions Held (Mean)	1.4		1.1		1.8	
Lived and Worked Only in Region	8	50%	5	63%	3	38%
Assignments Lived Other Canada (per person)	0.75		0.88		0.63	
Assignments Lived USA (per person)	0.13		0.13		0.13	
Assignments Lived Rest of World (per person)	0.25		0.13		0.38	

Note: Some percentages in the table may not add to 100% due to rounding.

The British Columbia Technology Industry Association (BCTIA) was formed in 1993 and includes over 9,000 companies. The organization develops programs and initiatives to grow the technology sector in the province. Vancouver is the home location for BCTIA, as well as the Society for Canadian Women in Science and Technology (SCWST), which is a non-profit association that promotes, encourages and empowers women and girls in science, engineering, and math. SCWST was also one of seven partners in a national program to increase the representation of women in the ICT sector that were funded by the Government of Canada between 2013 and 2016.

4.5 Summary

The three case regions in this study represent a range of sizes and characteristics. In combination, they could not be considered representative of the overall Canadian ICT landscape since they do not include some of the major centres including the nation's largest city, Toronto, the capital, Ottawa, or what is sometimes referred to as Canada's distinct nation within a nation, Quebec. The three regions do arguably combine to illustrate a reasonable picture of the Canadian ICT landscape outside of these major influences. They also provide geographic representation in that they are west, central, and east.

The Vancouver/Victoria region is home to the most ICT workers at about 55,000 with Waterloo at about 16,000 and Halifax at about 10,000 (Statistics Canada, 2014). The Vancouver, Victoria, and Waterloo regions enjoy larger numbers of Canada's Top ICT employers according to Branham Group compared to Halifax. The three are comparable in that they are homes to many universities with strong computer science programs. Waterloo is more of an industrial region whereas Halifax and Vancouver/Victoria have more resource based economies and are a home to major shipping ports. They are also influenced more by government as an employer and buyer of goods and services than Waterloo, which is not a provincial capital city. Unique characteristics of the Waterloo region include the influence of RIM and the region's proximity to Toronto, Canada's largest city. One notable similarity across the cases is in the regional representation of women

in the ICT sector with Halifax at a low of 20% and both Waterloo and Vancouver/Victoria at 23%. There are differences and similarities across the case regions in terms of socio-political and economic characteristics as has been described. However, the participants from each of the three regions are similar by demographics.

Differences in age, family, place of birth, education, job, and career histories are referenced throughout the study. Notable demographic similarities across case regions include that there were more CIO/Vice President participants compared to higher or lower level executives. In all regions, participants had more technical educational backgrounds than non-technical, and in all cases most of the positions they held were ICT-related. The number of organizations where they worked in their careers ranged from a low of 4.1 for Ontario women to a high of 5.4 for BC women, and the number of positions held ranged from 8.8 for Ontario women to 9.5 for BC women. One additional job change, over the course of what would be in the range of a 25-year career, is arguably minimal.

British Columbia had a more diverse place of birth and a higher number of divorces particularly among women. In all case regions half or more of the participants had worked and lived outside the case region with British Columbia reporting half of the participants staying at home, particularly men. Canadian ICT executives have travelled extensively for work as will be referenced as a theme in the following chapter.

While the case regions are different, the participants are similar at least based on a survey of the demographic data collected. Differences in their career experiences and in particular the barriers and enablers to their career advancement will be explored as results in Chapter 5, followed by discussion in Chapter 6.

CHAPTER 5 RESULTS

5.1 Introduction

This chapter describes the study results in order to answer the over-arching study question of how patterns in the career experiences of ICT executive men and women across Canada might inform initiatives to increase the representation of women in the Canadian ICT sector. For years, career theorists have applied a stage approach to career research (Schein, 1971; Super & Hall, 1978). This sequential framework is consistent with life development theory that also uses stages to describe the evolution of people's lives (Levinson, 1977). This chapter applies a career stage framework as described in Chapter 3 and is structured as follows:

- Early-career, which explore education, upbringing, and entry positions;
- Mid-career, which explores the bulk of career experiences and proposes a model of barriers and enablers to career advancement, and concludes with:
- Mature-career, which explore feelings about career including career outcomes of which participants were most-proud and those which they regretted.

The retrospective conversational interview approach as described in Chapter 3 suits the career stage structure for the discussion of findings. Education was the starting point from which all participants chose to tell their career stories. Experiences in upbringing were described by some participants but not all, and not as a starting place. The bulk of the discussion focused on the mid-career stage. The range of organizations where participants worked and the positions that they held throughout their career including career advancement barriers and enablers were the focus of this stage. The interviews concluded with a reflection on career outcomes that provided the data for the mature-career stage analysis. At the conclusion of each section of this chapter, structured according to stage, a summary of the findings is provided.

It is important to note that this chapter considers the Canadian cases as the baseline, consisting of evidence from all 48 participants across the three case regions. Gender is the primary dimension of the analysis; thus, Canadian men (n=24) and Canadian women (n=24) are the base cases. Regional case variations,

again by gender, are discussed relative to the aggregated Canadian baseline cases. This approach is appropriate because although patterns are evident across gender at the Canadian level, they are less evident across regions as will be described.

It is also important to note that in this chapter, techniques are applied to protect the confidentiality and anonymity of participants. Consistent with the ethics protocol, there is no attribution of quotations to individuals. Any references to individual names, organizations, or specific other identifiers contained in quoted passages have been changed and are instead denoted by an alternate generic name in brackets. Quotations are attributed to individuals identified by their case region, their gender, and a randomly assigned number. For example, participant "NSM1" is a Nova Scotia male participant. Similarly, a quotation that references "IBM" was changed to (ICT Company), the city of "Waterloo" was changed to (Location), the "health care sector" would be changed to (public sector), etc. in order to protect anonymity while allowing for sufficient identification to support the analysis.

In summary, this chapter follows a career stage sequence of early-career, mid-career, and mature-career to understand the career experiences of participants. The mid-career stage experiences, where the bulk of interview discussion occurred, are summarized in a model of barriers and enablers to career advancement at the Canadian level. The chapter concludes with an explanation of the lack of regional differences in the results and introduces the subsequent discussion chapter that concludes with answers to the research questions.

5.2 The Early-Career Stage

Participants typically described their careers as a progression, often offering a chronological sequence of events to summarize their career with post-secondary education as the starting place for the discussion. The interview protocol invited participants to, "describe their career in any way they want," and did not specifically request a description of education. The significant influence of education is

evidenced by the consistent pattern of participants beginning their career story with a description of their educational background.

> *I guess I'll go right back to the beginning. I graduated from the University of (Location) with a Computer Science major.* (KWM5)

The patterns in the education experiences of participants are the starting point for the discussion of findings.

5.2.1 Education

Education had a positive influence on career advancement and was an enabler overall. Lack of education was a barrier.

On balance, the study participants obtained university education far above the current Canadian average. In 2011, the proportion of Canadians with university education was 27% (Conference Board of Canada, 2012), whereas 94% of the study participants held at least a bachelor's degree. Only three participants had no post-secondary education, all of whom were women, and two of whom were from Halifax. One male Halifax participant obtained a Master's degree during mid-career. In all cases where participants had not received a university degree, lack of education was later described as a barrier to career advancement. Despite working internationally at executive levels, one participant described her lack of education as a clear barrier to career advancement:

> *I won't be interviewed (for a job) because I don't have a degree, even though I'll have obviously more years of experience than most people, and more background, and all those things, and that's definitely a barrier for me. And yeah, it's having an impact.* (NSW2)

The lack of education was matched with comments related to a lack of career plan or career intention among these participants; however, other participants with undergraduate and sometimes graduate level education also described a lack of direction early in their careers. An early-career stage theme, that relates to education and will be described later in this section, was the lack of a career plan or the lack of intention to pursue a career in a field related to ICT. Although most participants pursued a technical education that led to degrees in science, engineering, and computer science, several described a lack of career focus or an

early-career focus in areas not related to the ICT sector where they ultimately worked. As a new and emerging discipline at the time, most of the participants would have been considering career options, computer science may not have been a very visible career choice. One participant noted that the role of Chief Information Officer didn't exist when they began post-secondary education. This lack of career ICT intention emerged as a theme throughout the careers stories of many participants as will be described later in this chapter (see Mid-Career Stage). Several participants either expressed no career focus in relation to education or described a sudden change in their career intentions while at school. This pattern was also evident in entry job career decisions as will be described later in this section. The lack of ICT career intention described in the early-career stage is evidenced by quotations from women and men across all the case regions explored as follows:

> *I was going to go into pharmacy.* (KWW4)
>
> *I wanted to be Wendy Mesley (Canadian journalist).* (NSW6)
>
> *I was destined to be a lawyer.* (BCM4)
>
> *I had no real focus as a young guy leaving school. I had no idea what I was going to do and really didn't care.* (NSM5)
>
> *I was kind of fascinated with the whole business world but I had no idea what that meant in terms of career.* (KWM3)

ICT executive participants were generally well educated and explored a range of entry level career options, often without focus; however, not all of them described being well supported by the education system.

The education system discouraged women from pursuing technical careers and was a barrier.

The education system and in particular the influence on career by teachers and guidance counsellors was referenced by participants from all regions. Male participants referred to the education system less frequently than did women. Men described the influence of teachers and guidance counsellors as positive and an enabler, whereas women were less positive about the education system.

> *I could point to a handful of teachers …that took me under their wing and gave me some guidance and that's something I really appreciated. Right from elementary through to high school.* (BCM6)

Negative experiences with the education system, where teachers and guidance counsellors discouraged the pursuit of ICT-related careers, were reported only by women and from all regions. Teacher and guidance counsellor stereotyping of women as being non-technical and women being discouraged from entering technical education programs were evident from the interviews.

> *The first guidance counsellor I talked to, I said, "I'm thinking of Engineering" and he said to me, "Well, you can't be an Engineer. You're a girl."* (KWW2)

> *I did Shakespeare as an elective and I remember going into my English class and the professor was like, "Oh, it's so nice that you're wearing your boyfriend's Engineering jacket."* (KWW5)

> *The counselling that I received at the time was fairly limited and the programs and opportunities that were put in front of me were…the major categories.* (NSW6)

> *I had a teacher in a class, it was called technology something. So it was purely a technical skills class and he was definitely not pro women and I felt that he gave me a lower grade than I should have had just because I was a girl.* (BCW3)

Men participants also referenced how the education system, including guidance counsellors and teachers, was not welcoming of women. These types of socio-economic influences and their effect on women's ICT career choices are the type of factors that Trauth et al. (2004) suggests should be considered according to her Individual Differences Theory of Gender and IT. Similarly, upbringing and the influence of family are an important part of Trauth's lens as discussed in the next section.

5.2.2 Upbringing

The place of birth for participants was most frequently within the region to which they were associated for the study. Halifax was the least diverse case with respect to place of birth outside the region with three of the 16 participants being born outside of Nova Scotia. Vancouver/Victoria was the case with the most

diverse participants based on place of birth outside the region (n=10/16) including five born outside Canada, which was the highest for any region. More women were born outside of Vancouver/Victoria than men for that region. Vancouver/Victoria skewed the rolled up Canadian place of birth demographic, which ranged from 13% to 29% of study participants born abroad.

Childhood experiences were described by most of the interview participants despite not being a specific interview question. Upbringing was typically described positively, as a career enabler, and participants related most often to family or schooling when reflecting on their upbringing. Ethnicity was sometimes mentioned and some participants specifically attributed being an immigrant or the child of immigrant parents as being an enabler.

> *My ethnic background, being of mixed Western European and East Asian…has definitely been an enabler because it gives me an Asian name, which actually seems to bolster people's perception of technical competency. It also allowed me to not appear overly foreign, which still is welcoming to a North American or predominately white kind of business environment. So I kind of won the lottery in terms of racial dynamics.* (KWM6)

Awareness of diversity associated with travel or the influence of being exposed to multiple ethnicities during early childhood was also discussed. Some women participants described their exposure to diversity as a positive influence in their careers.

> *I was raised by English parents, schooled by the French since I was five years old and in my life always as an influence was a Native American nanny who was like a second mother to me from the day I got home from the hospital to the day of my wedding. So I always had this very interesting dynamic and influence of cultures and languages and different kind of socio-economic and different philosophies and perspectives on life.* (NSW7)

> *I went with my mom and we travelled a lot around the world and just that exposure really set me to understanding different nationalities.* (KWW1)

Despite these few references, exposure to diversity did not emerge as a theme; instead, family and school work ethic and exposure to technology were more common career enabling themes.

Upbringing experiences were generally positive for both men and women with family and school work ethic and early exposure to technology enabling later career advancement.

Family and school hard work ethic, as well as exposure to technology during childhood emerged as themes in the early years of participants. These factors were described as positive influences and enablers. Parents who worked hard and had high expectations, or participants being active in a range of extra-curricular activities including sports were cited as positive upbringing career influences.

> *Interestingly enough, that group of about 50 kids that I ran around with all through high school (were very active and) have gone on to be really accomplished people.* (KWW3)

> *They always pushed me. They're of Asian or part Asian descent. Anyways, the fact is that throughout elementary or whatever, they (my parents) pushed me very hard.* (BCM4)

> *It was my dad that got me into IT. He was writing systems for municipalities and radio stations and insurance companies and cable TV stations and the list went on. So I kind of got into that (programming) world with him.* (NSM8)

Upbringing was not always exclusively described by participants as positive in relation to career advancement. A few participants described aspects of their upbringing as both positive and negative career influences. For example, a few participants referenced a lack of wealth and their parents being risk adverse as having delayed their pursuit of entrepreneurial endeavors thereby being a barrier to their career advancement. Other participants described a lack of family wealth during their youth as a motivator and a positive influence that pushed them to advance their career.

5.2.3 Entry Positions

Entry positions, or first jobs, were generally described as an extension of the participant's educational experience. "I graduated from school and took a job with ICT Company," was a typical conversation flow.

Coop programs and summer employment were an enabler for most participants, especially those who started their careers in ICT

About half of the participants started their ICT careers directly out of university with many coming through cooperative education programs, with work terms, or through summer employment opportunities in ICT.

> *I was lucky enough to get a co-op assignment and then later a full-time job with (ICT Company) and got to work in a really well-funded high tech environment. I just got lucky. There's no other way around it.* (KWW3)

> *I went for a summer job and I ended up turning that summer job into four years work with (ICT Company).* (BCM1)

> *I joined (ICT Company) 32 years ago, and actually prior to that as a co-op student. I'm fortunate to have had a full career with one organization*. (NSM4)

Cooperative Education and work terms were cited frequently by participants (n=13/48) from all case regions. Both men and women described co-op education experiences that were generally reflected on positively and overall the influence of cooperative education was described as a career enabler.

Another early-career theme, which was previously highlighted in relation to education and will be shown to carry through to the mid-career and mature-career stage as an overall career pattern, relates to the unintentional nature of many participants' entry-job career decisions.

Entry positions were generally not chosen intentionally. Serendipity was an enabler in the early-career stage.

Serendipity seemed to be a factor in first job career choices for participants.

> *I'm embarrassed to even say it but I really didn't know what I was getting into when I joined (ICT Company). They came to campus. I really liked the people.* (BCW6)

> *The year we graduated, a company called (ICT Company) had just won a major contract…and I thought, "Oh. That sounds like fun," so I applied and got the job. They took on six of us.* (KWW8)

> *I started applying for jobs, got an interview and a job offer and really wasn't thinking too much. It was the first offer I got, so I just took it.* (BCM6)

> *I took a job with (ICT Company) partly because I wanted to see the big city, I guess.* (NSM6)

A pattern of serendipity and embracing “opportunities as they came along” will be described later in this chapter as a mid-career theme. Evidence of this “happy go lucky” attitude begins to emerge in early career reflections.

Entry jobs established context for the mid-career stage experiences where barriers and enablers to career advancement were more evident. The overall patterns related to entry jobs include the strong influence of coop programs for those participants who started their careers in ICT, as well as the casual and unintentional approach to entry job career decisions for participants regardless of whether they started in ICT or other sectors, which was also previously observed in relation to education. Thus, there are five overall barrier and enabler themes from analysis of the early-career stage that explore education, upbringing, and entry-positions as summarized in the following section.

5.2.4 Early-Career Stage Experience Summary

The following is a summary of early-career themes that emerged from the data:

1) Education had a positive influence on career advancement and was an enabler overall. Lack of education was a barrier.
2) The education system discouraged women from pursuing technical careers and was a barrier.
3) Upbringing experiences were generally positive for both men and women with family work ethic and early exposure to technology enabling later career advancement.
4) Coop programs and summer employment were an enabler for most participants, especially those who started their careers in ICT.
5) Entry positions were generally not chosen intentionally. Serendipity was an enabler in the early career stage.

5.3 The Mid-Career Stage

This section explores the bulk of career experiences and proposes a model of career influences - barriers and enablers to career advancement. Overall, the participants described enablers more frequently and with more intensity than

barriers, which is reflected in the model. Twenty-five career influences are described by individual, family, organization, or society categories consistent with the rational set out in the methodology chapter. The model identifies 11 individual career influences only two of which were described as barriers, and only by women. Ten individual influences were described primarily as enablers of career advancement by both men and women. Three family-related influences were described by both men and women as barriers with one family influence described as an enabler by both genders. Ten organizational influences were described as both barriers and enablers by both men and women. Organizational influences were mostly barriers, especially for women. One societal influence was described mostly by women as a barrier to career advancement.

What follows is a description of career influences, individual barriers and enablers to career advancement, by category. The research analysis framework described in Chapter 3 is used to situate each influence and to develop the integrative model.

5.3.1 Mid-Career Stage Barriers

Most participants described barriers to career advancement that they had encountered. Only a few participants minimized barriers and, instead, focused only on enablers during the conversational interviews. Comments such as, “I struggle to think of any,” or “I don’t dwell on negatives” were offered in a few cases; however, when participants were probed for barriers, generally some would emerge from both men and women. Women described more barriers than men at all levels, especially at the organizational level.

Individual Barriers

Lack of Self Confidence and Assertiveness

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Individual		
	-	Lack of Self Confidence & Assertiveness		

Self-confidence was identified as a key leadership trait by (Kirkpatrick & Locke, 1991), and women were described as less self-assured than men (Valian, 1998) despite confidence mattering as much as competence in the workplace (Kay & Shipman, 2014). A lack of confidence emerged as a barrier to career advancement among women participants. They described experiences where fear and feelings of inadequacy were a barrier that they needed to overcome. The lack of confidence was often based on a lack of technical skills and background relative to men (see also Enablers, Individual). Some participants expressed their lack of confidence as "being terrified" when they moved into positions of new or progressively more responsibility. Men participants did not express a lack of confidence nor similar feelings of fear or anxiety.

> *I don't necessarily have a lot of confidence at times but I'm getting better.* (BCW3)

> *At my core I'm not always very self-confident. I'm definitely one of these people who is always thinking, "I'm going to get found out that I don't really know what I'm doing" and that just gets exacerbated by moving into jobs where you don't know anything. It's like you're attracted to it and then the minute you're in it, you're like, "Oh my God. I don't know what I'm doing and everybody's going to realize I'm an idiot." But you kind of work through that over time.* (BCW6)

> *Somebody asked me if I wanted the position and I said, "No. I can't do that. I'm not qualified for that." I don't feel legitimate in putting in my resume because I don't think I have the background experience that position deserves. Meanwhile, the person who gets the position has none of the background criteria either. He just believes very strongly in his ability to pick it up as he goes.* (KWW6)

> *I've had it, this needling kind of feeling, this voice of self-doubt that you have to know how to tame because it's there and it is a huge barrier.* (NSW7)

> *I had to really figure out how to get my confidence up and I used to say this sitting in my little cubicle, I used to say to myself, "Just get one success at a time. If you get your first success, you'll start to feel better and then get your next success," and my whole plan was to build small successes.* (NSW6)

Lack of technical skill was sometimes referenced by women in relation to their lack of confidence. It seems women were not as confident with their technical skills as

were men despite both genders describing skills as an enabler (see Individual, Enablers)

> *I was scared to death to get up and do that. It was technology to a bunch of techie guys, right?* (BCW8)

> *I was never comfortable really pushing myself into be a representative for meetings and things like that in front of other executives because I always worried that I wasn't going to be technical enough.* (KWW2)

Women participants also described a lack of assertiveness as a barrier to career advancement. They sometimes paused to make a distinction between assertiveness and aggressiveness, perhaps trying to find a less "assertive-aggressive" way to make the point. They described organizational and societal contexts when they were being assertive-aggressive and they felt like they were seen as being "bitchy." Valian (1998) observed men to be seen as more assertive consistent with leadership qualities in society as described later in this section (see Society, Barriers).

> *I guess maybe I'm a little bit reserved about putting my ideas out there.* (BCW7)

> *I asked her (a Senior VP), "What do I need to do to take on a bigger role in North America? Give me the truth…" I remember her saying to me, "I think you need to be more aggressive sometimes."* (NSW3)

> *I've experienced it to a certain extent myself but I've seen with other women and that is if you are very business-like, straight-forward, assertive-aggressive, call it whatever. You, you can get labelled and there are times that you speak up and it's clearly not appreciated, right?* (NSW5)

Other than confidence and assertiveness, participants described their career advancement in relation to the presence of personal feelings, traits, skills, and values rather than the absence of them, with one exception. A lack of technical skills was described as both a barrier and an enabler, and will be discussed later in this chapter (see Enablers, Individual). At the family level, experiences were mostly described as a barrier but sometimes, they were also an enabler.

Family Barriers

Care Responsibilities

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
	-	**Family** Care Responsibilities		

Family care responsibilities were described as a barrier to career advancement by both men and women across all case regions. For women, the barrier related mostly to caring for children and the impact family care responsibilities had on their ability to travel for work. While most care responsibilities related to children, one women participant described elder care as a career constraint.

> *I had two small children. I was the main breadwinner, even though I was on the down elevator, I still had a good job and he didn't have a great job. So there was a lot of pressure to stay and just suck it up…you have less flexibility when you have kids. You have to have an income so you make choices that constrain you.* (BCW2)

> *I have two relatively aged parents living with me...I'm their primary caregiver… I'm making sure that it (works out). And there's certain things I just cannot do. I don't want to disturb their life.* (KWW7)

Eighty one percent of the study participants were married at the time of the interview and the remaining nineteen percent were either single or divorced and not remarried. The mean number of children per participant was 2.0 across both genders with the families of men participants having a mean of 2.2 children whereas women had a mean of 1.8. Women participants tended to have smaller families since most of the divorced or single participants were women and they had fewer children. Although family structure reported from Quesenberry, Trauth, and Morgan's (2006) study of work family balance in the IT workforce included more women who were not married, the findings were similar in that women experienced a career penalty for being on a "mommy track." Some women participants described being held back from promotion following maternity leave.

> *When I came back from maternity leave….I had to kind of re-claim some territory. I reclaimed very different territory than I'd had prior to when I*

left…which was kind of annoying because I'd had a really strong (technical) team. (KWW2)

Some of the women participants described, with emotion, decisions made to not have children in order to favour their career advancement. Although acknowledged, these decisions were not talked about in detail despite being asked, "Do you want to talk more about that?" Relative to men, women in the study may have made greater work-family trade-offs given the lower birth rate and marriage rate among women participants. Travel was an example of one such trade-off.

Business Travel

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Family		
-	-	Business Travel		

Men and women described family related barriers around business travel. Men from all case regions typically described this as being brought about by their wives not supporting travel or relocation opportunities that, in turn, prevented the men from pursuing stretch assignments and the application of new skills that could have advanced their career. Strategies for accepting, navigating, and negotiating partner reactions to travel and relocation were described by men in a similar way to those described as career advancement and family balance strategies of executive women (Ezzedeen & Ritchey, 2009). Men described pressure from their wives as a barrier that they needed to work around and in some cases, it caused them to forgo advancement opportunities.

The biggest barrier is home life. There were so many times along the way where I've had very tearful conversations with home because I'm not coming home, or I'm going onto the next thing, or my thing is being extended. That was the hardest part of my journey. If you were to ask me now, could I have been bigger and become more successful without being married? I would say, 'Yes.' But home life, home life has curtailed that. (NSM2)

They have no intention of ever moving out of (Location) and at the end of the day, it's tough to run a (national team in another Location). So your

willingness to travel, your willingness to relocate, your family situation…is an external barrier. (BCM7)

It wasn't the best fit for my wife. She didn't feel comfortable…we had a young son at the time, and through that process, I turned down that role…I should have maybe taken opportunities to move elsewhere and gotten a little bit broader range of experience. (KWM3)

Women also described the pressure of travel and sometimes being out of the country for extended periods as a barrier with their negotiation of family support as a solution (see Enablers, Individual).

The role I had at (ICT Company) was multiple functions a week at night. I was 50% out of the country year round. Had I not been able to do those things, I wouldn't have been as successful as I was. It's just as simple as that. I do think that still is a barrier. (NSW2)

The individual and family barriers, including family care and business travel, were few in number compared to barriers in the category of organization.

Organizational Barriers

Business Cycles and Downsizing

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Organization		
	-	Business Cycles & Downsizing		

There were more barriers described that related to the organization than were described in relation to individual, family, or societal categories. Business results or business cycles, and their impact on organizational performance were often described as a barrier. The ICT sector has experienced significant growth, as well as sometimes sudden downturns. ICT organizations experienced highs resulting in hiring, and lows resulting in layoffs and downsizing. Participants described situations where organizational performance led to layoffs and downsizing that adversely impacted their careers, especially women:

Revenue and profit changed, you know? It wasn't so easy anymore to be a success. It didn't just happen, right? You still worked hard but everyone

expected those same numbers to flow and they weren't there…I would say the blow-up in the economic situation was a barrier post Y2K. (BCW5)

So I left and went to an internet start-up, which promptly, within about three or four months, blew up as most of them did in 2000. I was quickly out of a job. (BCW6)

I was on vacation at the time when everybody else got laid off. I came back from vacation and packed up my office and then IT was gone. So it was a very surreal experience. You could see it happening for so long and it was such an awful thing to be part of. (KWW2)

I was going to be moved to (Asia) with my family in order to launch our services there, and then obviously that was cancelled because of our downturn in our company and eventually we closed the site here…that's probably the biggest setback I've had in my career. (NSW2)

We were going great for about eight and a half, nine years, until the tech bubble burst. The burst, you know, the burst happened to my career anyway. I had to lay off all my staff and then I got laid off and that was when I moved into (a non-ICT function of the business). (NSM8)

The adverse career effects of downsizing were described more often by women than by men and comments from women in relation to business cycles and business results had greater intensity than did those of their male counterparts. The notion of a "glass cliff" has been the subject of debate and includes an argument that women are more likely to be replaced after serving in senior roles during times of crisis (Ryan et al., 2016). This is consistent with the present study where women described the negative effects of downsizing more than men. Women in higher ranking jobs were three times more likely to lose their jobs as a result of downsizing compared to men (Carter & Silva, 2010). Business results were also described as an enabler both at the individual and organizational level (see Enablers, Individual and Organization) where the boom in ICT employment buoyed the careers of those in the sector. The highs experienced by the ICT sector are evidenced in the following quotation that serves to illustrate the other side of downsizing when hiring was at a peak and sometimes not undertaken with great care.

It was in that dot com frenzy when I went to work for them, I walked into the room of the recruiter and she had this white board…full of vacancies that she was hiring and it was almost to the point where if you had a semblance of a background suitable for the job and your blood was pumping, then you were offered the job. Like there was no consideration around, "Well gee. Is this person really going to fit on the team? What are their long term aspirations?" Because we were in a frenzy of creating something and then we're going to go public and everybody's going to be rich and the long term doesn't really matter. (BCM8)

Recruitment and selection practices and their implication for organizational fit will be described later in this section after exploring the barriers related to being in minority, as well as being excluded from social networks.

Being in a Minority

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Organization		
	-	Being in a Minority		

The male dominated nature of the ICT sector was very evident from experiences described by participants. Women from all regions frequently and consistently described, "being the only women" in many contexts. They described being the only women in the room, on the plane, at the board meeting, at the conference, on the leadership team. They described these situations as being normal in the sense that it was not unusual or it was expected that they would be the only woman.

I was the only woman in the whole conference, right? (BCW4)

I have spent my entire career as often the only female in the role. (BCW5)

I'd be the only woman in the room. (BCW7)

I was the only female sitting at the 1.2 billion dollar table. (KWW1)

There were 10 of us on that jet. I was the only woman, all again Directors and VPs. (KWW5)

Almost all the time I was the only woman in the room. (KWW3)

In a room of 200 people, I'm the only woman. (KWW8)

I'm one of eight (on the leadership team). I'm the only female. (KWW6)

I'm looking around, I said, "You realize I'm the only female here?" And they all kind of like, it didn't dawn on them. (NSW5)

I always show up in meetings and have for the last 15 or more years, where I'm the only woman in the room. (NSW1)

I remember presenting to the all-male team, I was the only woman over there on the management team. (NSW7)

There was a tone of tolerance, disappointment, and frustration when women participants spoke about the male dominated culture of the organizations where they worked and the ICT sector in general, "I used to get major frustrated…like major frustrated!" Organizational culture has been described as assumptions, values, and norms that cut across occupations and organizations and that are systemic (Ridgeway & Correll, 2004). Research suggests that cultural barriers can significantly affect women's participation in the IT workplace (Soe & Yakura, 2008). Both men and women participants spoke about the male dominated nature of ICT as a problem, as something they want to change. Terms like "locker room" and "cowboys" were used by men to describe what some of them considered an unprofessional culture lacking diversity and being particularly unwelcoming to women. They reflected on their careers and often noted the culture had changed, was continuing to change slowly, and they wanted it to change more quickly. Access to social networks was an aspect of this culture.

Politics and Social Network Exclusion

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Organization		
	-	Politics and Social Network Exclusion		

Despite the pattern of participants wanting a more diverse and inclusive ICT sector, they often spoke about the deep rooted “good ol’ boys” club, typically in a manner that was accepting of it as a reality of office “politics” and a cultural norm.

> *You know, maybe there was originally more of an old boys club in a couple of the locations.* (BCW1)
>
> *It kind of was an old boy's club.* (NSW3)
>
> *There's a certain kind of slap on the back boy's network that is normal because there's a whole bunch of men.* (BCW2)
>
> *It's very staunch, you know, the old boys club.* (KWM5)
>
> *It was a consummate old boy’s network, right? You were one of the boys or you weren't.* (BCM7)

Men participants described the “old boy’s network” as having advanced their career. They described the relationships they had established as positive for their careers (see Enablers, Organization) where women described it as having been a significant barrier. One women described a work related female network that supports entrepreneurs as having helped her but otherwise the “club” was a source of power and influence and was not described as a place for women.

Power is at the core of the findings of much gender research and notions of status, authority, position, and influence are central to the discussion (Marshall, 1995). Organizational politics is a daily process based largely on interactions and relationships (Davey, 2008). Although most of the participants described being sensitive to relationships, and working to leverage relationships in order to perform well and advance their careers as will be described later in this chapter (see Enablers, Individual), many also referenced ‘politics’ as having been a barrier at some point in their career. These experiences with office politics were described by both men and women from all case regions. Men described organizational politics as a neutral influence in situations where they, “should have known better,” whereas women described it as based on power and having had more of a negative impact on them.

> *I've been burned a few times because I wasn't really astute to the politics of the day.* (KWM8)

> *When I got into that whole cultural thing, the politics and the backstabbing and uncomfortable boardroom conversations. The bullies were all out in full force looking for heads. I hated that. I found that to be just really annoying and not helpful at all to anyone.* (BCW5)

A few women described behaviour they had encountered in the career that was misogynistic in nature, as described later in this section following further discussion about social networks including the influence of golf.

Women's accounts of being excluded, or not being on the "inside," related often to not being invited to male oriented social events. These women perceived that business relationships were developed on the golf course and that men had a career advancement advantage through golf events. Their comments were consistent with a range of literature about social networks and their impact on careers, specifically how strong networks enhanced career prospects (Cabrera & Thomas-Hunt, 2007; Ibarra et al., 2013; Lyness & Thompson, 2000). Golf and related male social events were a source of frustration among women participants:

> *They were often, "Let's go golfing on the weekend" and there's no way I would have been invited to that. Our boss at one point had a cottage and so he would invite like five guys up to the cottage. So again, I don't fit in, it's because I'm not a guy.* (KWW5)

> *So golfing and going out and drinking lots of beer after work and all that stuff, so that's how things got done…I just started to refer to it as the snake pit.* (NSW5)

Golf has been cited as an example of male dominated work related social networks in previous studies (Glass & Cook, 2016; Trauth, Quesenberry, & Yeo, 2008).

The golf-related frustration went beyond informal social networks and was also expressed as a source of frustration in relation to formal business recognition events. Women and men participants described awkward situations where events sponsored by organizations were male focused and not welcoming for women. In one case, a woman who was the only female executive at a major corporate recognition event was asked if she would rather receive the "crystal candy dish" gift given to wives of employees as event guests rather than the male oriented

business recognition prize offered to the other male employee award winners. It seemed the organization had not anticipated a female winner.

Women cited many situations where they “felt like a fish out of water,” as the only woman in a strongly male dominated culture. The career impact of these cultural norms can be summarized by the following quotation that shows the struggle that many women participants described:

> *You don't always get a seat at the table even through you might deserve one. Part of that seems to be around being excluding from that quote, unquote “in group” and that in group being, again, male dominated, lots of relationships and history coming into play as well. So that's why I'm having trouble. Can I say to you that I think I've been excluded solely because I'm female? No. But I will tell you that breaking into that “in circle” and being considered part of that “in group,” I haven't done.* (KWW4)

Exclusion from social networks and not being on “the inside” seemed to be at the core of why many women felt they did not have a strong sense of organizational fit. Men also experienced a range of feelings about fit and its impact on careers.

Feeling of Person-Organization Fit (see also Enablers)

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Organization		
-	-	Feeling of Person-Organization Fit	+	+

Person-environment fit is broadly defined as a match between an individual and a work environment and is further categorized as person-vocation fit, person-job fit, and person-organization fit that considers the compatibility of people and organizations (Kristof-Brown, Zimmerman, & Johnson, 2005). Person-organization fit is low when there is a lack of congruence between the values of individuals and organizations (Chatman, 1989). Participants described shifts in organizational and individual priorities that led to a lack of fit and they described situations where they changed organizations and discovered a lack of fit. Sometimes these were described as culture shifts. Organizations sometimes shifted from a longer term customer focus to a short term financial results focus, which accounted for a fit gap with some participants. Sometimes the fit gap related to organizational

expectations of work effort when individuals were more focused on family priorities. Where gaps were described, typically individuals made decisions to change organizations. In the longer term, these moves were sometimes seen as career advancement enablers as will be described later in this chapter (see Enablers, Organization). In the short term, these moves were generally considered as a set-back and the organizational shift that led to the fit gap was a barrier.

> *It was really tough, brutal. I came from a very customer-focused culture in Canada to one where they would you know, they just wanted to see what they could squeeze out of customers for the benefit of the owners of the company.* (NSW5)

> *You know, "When the canary's in the coal mine, when the canary keels over, that's the sign to get out." In high tech, the canary is keeling over but people are told, "Lean in, work harder." In fact, there's always a steady stream of people to replace those who burn out.* (KWW3)

> *I don't know whether it's old age or something but the company changed cultures and then you see there's a mismatch. All of that stuff becomes a disabler of advancing your career…It becomes more work than pleasure…at the end of the day you have to make a decision whether you're going to sacrifice your personal way of doing things for what the company's asking you to do or whether it's time to move on.* (KWM3)

Men and women from all regions described fit at some point during the interview including its influence as both a barrier and an enabler to career advancement. Another theme that emerged where the influence was both a barrier and an enabler related to organizational policy that was overall seen to have had minimal impact on the careers of participants.

Organizational Policy Malaise (see also Enablers)

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
=	=	**Organization** Organizational Policy	=	=

Organizational practices can be thought of in relation to quality management, human resource management, customer service, marketing, and

general management (Massimino & Kopelman, 2012). These are sometimes referred to as business functions. Performance management, management development, training, compensation, and other programs are often overseen by the human resource management function and are guided by organizational policy (Dessler & Chhinezer, 2016). Policies, programs, and practices and their impact on the careers of participants were explored during interviews (see Appendix, Interview Guide). Participants from all case regions, both men and women, generally described organizational policy as having had a neutral impact on their career. Although some participants provided examples of policy and programs that helped them to advance their career such as positive management development experiences (see Enablers, Organizational), many of the same participants, when probed about the impact of policy and programs on their careers would provide a terse response like, “none really.” This neutral perception of policy as a career enabler may be more related to how it has not been personally relevant to the executives in their careers rather than a statement about its significance to the organizations where they worked. Most participants described policy as important to organizations and most considered it as something to be respected in order to “stay out of jail” but none of them cited personal experiences where its application had an influence on their career beyond a few references, when probed, to management development and relocation assistance programs (see Enablers, Organization). There were no specific references to diversity programs, or their absence, having influenced the careers of participants.

Despite an overall neutral attitude about organizational policy by men and women, negative experiences with the application of policy were made by some women participants in relation to inequitable compensation as will be explained. However, before moving to these examples, it is important to highlight accounts from women about organizational responses to misogynistic behavior. Misogyny is generally understood to be the dislike of women. A few women described behaviour they had encountered in their careers that was misogynistic in nature. Some women reflected on men who had behaved as bullies towards them or who had made sexual advances. While most described having “shrugged off” the

misogynistic behaviour as, “just the way it was,” two women described having initiated formal complaints in response to what they considered to be inappropriate behaviour.

> *Because of that kind of culture, every Friday at lunch, everybody except the Department Secretary and I, would go to the strip club because where else would you have lunch and that was very typical and then they'd come back to the office about three o'clock, drunk and obnoxious and this particular VP of Engineering had, um, there's no other polite way to say it. He had sex toys on his desk. So he'd have this little wind-up toy that he'd wind up periodically, absent-mindedly and of course, he had posters of the Snap-on Tool Girls…they ended up having a new VP of Engineering and things slowly changed over time.* (KWW3)

> *I remember crying with this (Executive) and she would cry with me and we would talk about these men …he was a bit of bully and they had to move him around and he happened to be my boss and I was struggling with what my role was and he was a guy who, I don't even know how to describe him. He still scares me actually and he was good buddies with the CFO.* (BCW2)

These women described personal incidents that were powerful and seemed to be firmly etched in their minds. The stories they shared suggested that although the organizations where they worked had responded to their reports of misogyny, the response was slow. A lack of harassment policy was not described by participants; however, the application of such policy in these situations seemed to be ineffective. Although they did not describe these incidents as set-backs in their careers, they did describe them in negative terms and the lack of effectiveness of policy (or at least its application) in their situations may underlie why these women described policy as having had a neutral impact on their careers. Beyond the two references to misogyny, policy and its application was described as a barrier only in relation to compensation inequities.

Inequitable Compensation

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Organization		
	-	Inequitable Compensation		

Women described inequitable compensation in the ICT sector where they were paid less than men for comparable work. The inequity was not attributed to pay policy and there were no accounts of intentionally unfair pay plans; however, many women either had some evidence or suspected they were not earning the same compensation as their male colleagues or were not paid fairly. Male participants did not describe similar situations. Women described pay equity frustration that they related to a range of influences, including a sub-conscious bias and other systemic issues. The pay equity frustration that they described emerged as a barrier theme because of what seemed to be extra effort that women needed to take in order to achieve the same outcome. This theme is consistent with organisational fit barriers previously described and the recognition bias as will be described next. There were a large number of references to pay equity as a barrier, and only from women.

> *The men that I worked with in the early days, of course, were making significantly more. At one point, I actually quit, I went back 48 hours later but I quit because I found out my male peer, who had less education than I had…was making (twice as much).* (KWW3)

> *I was sort of punished in the sense that I was young, um, because they had difficulty paying me the same as other people who were doing the same job as I was…they just kept having to put me in the bottom of the bands because other people who had been there longer, had seniority, and had a higher salary to begin with.* (KWW5)

> *So I choose to leave for a couple of reasons and one of them was just plain and simple pay…I had run up against a whole bunch of feedback that…it was a bit of a supply and demand kind of situation…I did not like that answer. (KWW4)*

Women described cumulative pay inequity that had developed over time. There is strong evidence that women are compensated at lower levels than men after controlling for education credentials at the outset of their careers, but it is less clear if this compounds over time (Weinberger, 2011). A cumulative disadvantage is argued by Carter and Silva (2011) and research has shown that accountability and transparency practices reduce the pay equity gap (Castilla, 2015). A prevailing belief was evident from the accounts of women that the best strategy to earn more

pay was to leave the organization and seek employment elsewhere which might also cause a loss of career momentum. They described an environment where, "you need to leave to move up."

> *I would say that sometimes compensation is incredibly inequitable. There's inequities across compensation in terms of skills and value for a job…it's probably biggest with internal progression versus external hires…if you're looking for a higher career and higher pay, you've got to leave.* (NSW6)

> *I'm only the shiny new thing for probably the first few years and then I lose my shininess and somebody else externally looks better…you shouldn't have to leave to do that same role to get that extra (money).* (NSW2)

There was some acceptance of the compensation disparity at the organizational level and a suggestion that it needed to be dealt with individually rather than through an organizational initiative. This view supports a previously identified theme that women did not expect organizational policy would be helpful to their situations. Women described situations where salary inequity had been corrected, mostly through personal relationships and the intervention of men (see Enablers, Individual).

> *The salary scale is different for male and female…don't spend your time whining about it because it's just the world that we live in and you know, we can all move forward with those good opportunities. Find a way to make it work for you and affect the change. Never be a whiner about it.* (BCW5)

> *I get a phone call from him saying, you know, I've been around enough. I've done my 30, 60, 90 day evaluations, etcetera. "I don't think you're titled right or levelled right with the work products that I'm seeing. You know, here's your promotion to VP."* (KWW6)

Compensation was not the only source of frustration for women. Another career advancement barrier that they identified related to recognition, as well as perceptions of commitment that men also described as a barrier.

Recognition and Commitment Bias

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
-	-	**Organization** Recognition & Commitment Bias		

Women described feeling a need to produce more and better results in the workplace to receive the same respect and recognition as their male colleagues. Perceptions that women need to work more and perform at a higher level than men to be similarly recognized were described by Davey (2008) in relation to organizational politics and were especially evident when performance expectations were not clear (Caleo & Heilman, 2013; Heilman & Haynes, 2005). Both genders described hard work as an enabler (see Enablers, Individual); however, women lamented receiving less recognition for the same effort. Women participants experienced this recognition bias and described it as a frustrating barrier to advancement in their career.

> *For every success that he might be able to demonstrate, I have to demonstrate three to five more to get the same level of respect, the same level of recognition…I've always had to work harder for the recognition of what I've achieved and that the recognition doesn't come the same in terms of the how or the frequency as it does for others around me, who just happened to be all male.* (BCW6)

> *I had the feeling that I had to prove that I could already do the job before I was going to get the job. Whereas it felt a little bit more like men just had to show the potential to do a job and they would get the opportunity but it was really just a feeling, and I don't have any proof of it, and I haven't really felt it since.* (BCW6)

Another bias described mostly by men participants related to perceptions of their commitment to the organization when they favoured their family in relocation or travel decisions. Several men described how saying "no" to opportunities that were presented to them implied they were not committed to the organization or to their career. Declining opportunities was career limiting for men and resulted in fewer opportunities being presented in the future. This experience was described by male participants typically from large organizations in relation to family-based decisions about relocation or extended travel. When they had turned down opportunities, they believed they were labelled as not committed.

> *It absolutely works against me because every time you decline a role you are looked upon differently in the company… they'll only ask you so many times and then you'll be viewed upon as someone who is either not*

cooperative, not flexible, or worse scenario, not committed to the company. (NSM7)

This bias relates to the barrier noted previously in this chapter where men described how family commitments restricted business travel, which in turn limited their career opportunities (see also Barriers, Family). Women needed to work harder for recognition and men risked being seen as less committed when they declined travel or relocation. While both genders experienced these biases, women experienced hiring and promotion bias while men did not.

Hiring and Promotion Bias

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Organization		
	-	Hiring & Promotion Bias		

Gender and its influence on hiring and promotion has been a research topic across industry sectors and roles (Ridgeway, 2001), in relation to ICT (Shortt & O'Neil, 2009), including in technical versus non-technical roles (Chinn & VanDeGrift, 2008). The proportion of men versus women in an organization has been shown to influence hiring and promotion patterns. Women are more likely to be hired where women are already present (Cohen, Broschak, & Haveman, 1998; Dawson, Kersley, & Stefano, 2014) and studies have shown that men tend to hire men (Tapia, 2006).

The participants reflected on how stereotypes and bias negatively influenced hiring decisions for women. Described as a subtle bias, they provided accounts of hiring and promotion selection bias that were mostly second hand and not directly experienced by them.

Who gets selected to exclusive leadership programs, you know it's the men making the choices, they think about who they know; how do they know? Well, they probably know more men than women, so more men by default get selected. That's a second generation bias that's not evident. It's sometimes not even deliberate. (NSW7)

> *I've started to wonder if we don't have hiring bias. As a matter of fact, I'm sure we do.* (KWW4)
>
> *There's an old adage that says, "Managers hire in their own likeness," so when you're not in that likeness, that's pretty hard.* (NSW6)

None of the participants specifically described being "passed over" on account of gender. There were a few stories shared related to blocked promotions where a boss intervened to hold an employee back from a new opportunity because it was determined their current assignment needed to take priority. These situations did not emerge as theme. Women participants described a hiring and promotion bias that favored men, which men also observed but did not experience directly.

The participants were generally positive about their careers (see Career Pride) and described a continued shift towards a more gender-balanced ICT sector and society. This shift was described as occurring slowly. The current state of this societal transition was evident in accounts of more broadly based stereotypes and biases that were barriers to career advancement at the societal level.

Societal Barriers

Leadership Stereotypes

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Society		
	-	Leadership Stereotypes		

Research on the topic of women in leadership has explored subtle forms of gender bias that are often invisible and based on subconscious stereotypes (Ibarra et al., 2013). Women from all regions described leadership stereotypes and some of them offered accounts of subtle bias resulting from these stereotypes. There were no specific questions asked about leadership stereotypes or bias in the interview; however, the conversation often drifted into this topic. When describing stereotyping and bias women participants used terms like "unconscious," and "second generation," which is consistent with the literature (see, for example, Chapter 2, "Double Bind").

> *A lot of it is so unconscious that you couldn't describe it. It just happens and this is challenging for me, intellectually, to try to describe this to you because I don't think that a lot of woman could say, "That moment in time, something actually changed," because I think it's so subtle based on culture and social norms, right? That you can't actually peel it in any way.* (BCW2)

Women described experiences with second generation bias, including women in the workplace being seen as too emotional and woman leaders being perceived as too "bitchy." The interview discussion suggested that these stereotypes were directly experienced by women participants. Men also commented they had observed these stereotypes but not experienced them directly.

Gheardi and Poggio (2001) describe how perceptions of leadership qualities can differ for men and women and the resulting "double bind" that holds women back. Qualities such as being decisive and assertive are desirable leadership qualities for men, but when described in relation to a woman they become negative. Women described needing to act like men in order to advance and how they accepted the requisite negative perception of being a "bitch."

> *I haven't really experienced blatant discrimination but there have been situations where it's obvious [Laughing] that I'm a woman and that I'm thinking differently and I feel I'm being treated differently…I guess throughout my career it can be hard to be female and competent and direct and not be labeled, quite frankly, a bitch.* (NSW5)

> *I hate to say it because it sounds a little stereotyped but you really can't mind being called a bitch because you need to take things, they're not going to be given to you.* (NSW4)

> *One of my closest friends (in ICT)…she said, "You have to almost think like a male to get ahead and act more like a male rather than a female," which is more of the authoritative style…versus maybe your natural style.* (KWM3)

Ibarra et al. (2013) described second generation gender bias as a subtle series of perceptions and sub-conscious actions that hold women back. These perceptions influence how women act and how they react to workplace situations. Although subtle, these biases and associated stereotypes were visible to women participants and a powerful part of their career stories including managing their emotions.

> *They think you'll be extremely emotional and you'll probably not be a great leader. I'm more monotone in how I lead and you'll never see a reaction from me on anything. They expect you as a female to be somewhat crazy. Like an emotional, exaggerate, you know, not able to handle a very stressful situation.* (NSW2)
>
> *We have an ongoing fight, [Laughs], in here about what emotional means. You know, there is a stereotypical response for a woman when she gets upset that there will be tears and that can be considered emotional but a man yelling and perhaps slamming a fist on a table is seen as what? Not emotional? It seems to me to be just as emotional, it's a different emotion… I get that it's not the same but there is a built-up preconception about what is strong and what is weak and what is ok and what is not.* (NSW4)

Women participants were sensitive to these social stereotypes and related bias they had encountered and observed. There was a range of emotion expressed about these stereotypes including an attitude of acceptance "it is what it is," a feeling of optimism that these stereotypes were gradually eroding and "we're getting there," as well as a commitment to change in that "we have a long way to go." These sentiments were evident in both men and women.

5.3.2 Mid-Career Stage Barriers Summary

Following is a summary of the mid-career stage barriers described in the previous section with concepts set in bold to align with the summary model found in Section 5.3.6:

1. Women described a lack of **confidence and assertiveness** as career advancement barriers where men did not.
2. Both men and women described **family care responsibilities** as a barrier. Caring for children created a constraint that resulted in limited career growth opportunities for women. **Business travel** constraints, sometimes imposed by wives, resulted in limited career growth opportunities for men and were a barrier to career advancement.
3. Downward **business cycles** and poor business results that led to performance pressures and downsizing were described as a barrier to career advancement by women more than by men.

4. **Being in a minority**, where office **politics and social network exclusion** by the “old boys club” and traditional male activities such as golf were a strong influence, was described as barriers to career advancement for women.

5. Erosion of **person-organization fit**, resulting from changes in organizational culture such as shifts towards short term financial performance and away from longer term customer or people considerations, was described as a barrier to career advancement for both men and women.

6. Both men and women demonstrated a malaise of **organizational policy** and stated that it had a minimal impact on their careers.

7. Women described **inequitable compensation** where women were paid less relative to their male peers for equal work in equal roles.

8. Women and men described **recognition and commitment bias** including: women are required to do more and produce better results in the workplace in order to receive the same respect and recognition as their male colleagues; and when men decline a career opportunity involving travel or relocation they are viewed as not committed to the organization.

9. Women described **hiring and promotion bias** where men were inclined to hire other men rather than women.

10. Women and men described **leadership stereotypes** prevalent in society and the workplace that were barriers to advancement for women including: women in the workplace are too emotional; and strong women leaders are “bitchy.”

5.3.3 Mid-Career Stage Enablers

All participants described enablers to career advancement that they had experienced. Unlike barriers that were often different for men and women, enablers had more similarities across gender. Participants of both genders described more individual enablers compared to the other categories of family, organizational, and society. Although the same enablers were described by both men and women, some enablers were stronger for women compared to men and vice versa. Women’s accounts included more references to innovation and risk taking, as well as more references to initiative and determination.

Individual Enablers

Innovation and Risk Taking

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Individual		
		Innovation & Risk Taking	**+**	**++**

The ability to conceive, introduce, and implement change has been a top research priority for scholars, educators, and policy makers today as it has been for many years (Ibarra, 2004). Pioneering behaviour was described by Bowles (2012) as contributing to the ascent of women to top leadership. Women have been described as more risk adverse than men (Sundheim, 2013) but a gender balanced Board of Directors has not necessarily resulted in lower risk decision making (Adams & Funk, 2012). Both men and women identified innovation and risk taking behaviour as enablers of their career advancement but women did so more frequently than did men. It was evident from the career experiences of men and women participants, based on their resumes, that they were risk takers and innovators having started companies and undertaken large risky projects, but women made more direct reference to these experiences during interviews than did men. Women attributed their career success to risk taking more so than did men although both genders acknowledged risk taking and entrepreneurialism as important.

> *Be seen to be transformational, that you're not just there to simply keep the lights on and run things the way that they've always been run but rather challenge the status quo, look at how things can be improved.* (NSW5)

> *I knew I could take chances with things that other people would not take chances with. What's the absolute worst thing that can happen if this doesn't work out? I'll eat brown sugar sandwiches. So when you know that's what you would go back to, if all hell broke loose and you know you can survive it, you can take risks in ways other people can't and I think if you scratch the surface of women who are successful in high tech, it's being willing to take a risk. I don't think I'm unique in that at all.* (KWW3)

Women also described how they had proposed new ideas or pursued additional responsibility beyond their job scope to advance, demonstrating initiative that they also described as an enabler, more so than did men.

Initiative

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Individual		
		Initiative	**+**	**++**

Displaying initiative was an enabler of career advancement according to Mainiero (1994) and was an element of the "drive" that Kirkpatrick and Locke (1991) descried as a key leadership trait. Women participants described their individual initiative as a career enabler more so than did men. Women in all case regions described situations where they took initiative that contributed to their career advancement. They described situations where they made business cases to assume positions that did not exist, where they took steps to create new markets, and where they initiated change. Women's accounts seemed to illustrate a need to take initiative in order to get ahead. They had come to understand and expect that nothing was going to be "given to them" but instead they needed to initiate things on their own.

> *I put together a business case for the Vice President that ran the business unit and I said, "Here are the areas that I see you need help with and these are the things that I think we should put in place and this is how I think it's going to increase your business and drive up your sales and your revenues." He really liked that and I said, "So, okay great. So this new role that I'm creating. The other part of it is I want to go back to school and I want to do some kind of other degree."* (KWW2)

> *I will create a presentation without being asked to. I will write an article. I spend a lot of my own time reading books, reading blogs, just learning. I don't do that because I'm trying to get somewhere. I do it because it interests me. I think that shone through even though I wasn't doing it to try and promote myself. He saw that I was, I was doing more, more than I was being asked for.* (BCW3)

> *I was already you know, frustrated with how things were being done corporately, therefore reaching out and offering suggestions or imposing what I felt was the best thing to do where I could, where I felt there was space to do that. But that requires a certain personality that's not going to wait for the invite, because you're not always going to get the invite.* (NSW4)

Women's descriptions of initiative as an enabler are consistent with their comments about innovation, risk taking, and determination, as well as learning, and stretch assignments as will be described later in this section. Women participants described situations where they took initiative more so than men and showed determination, which was described as an enabler by both genders.

Determination

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Individual		
		Determination	**+**	**++**

Both men and women described determination, including persistence and winning, as career enablers. This is consistent with Vinnicombe and Singh (2011) who described drive, determination, and energy as career facilitators shared by men and women. Participants from all case regions described moments in their careers where their determination helped them overcome adversity. While both men and women described these types of experiences, women spoke of them more often and in a different context. For women, determination was more related to perseverance, which has been identified as a key element of women's human capital (Junquera, 2011). Women seemed to describe a need to "keep trying," to "stick with it," while men more typically described a need to "win." Men described fewer experiences related to this theme and their comments were consistent with careers that had faced less adversity than those of women. Men were determined and persevered because they had "something to prove" or needed to "be at the top." For men, determination was related to ambition whereas women were determined and persevered to "solve a problem" or work through a "challenge."

"Well, I have to stick it out." I have to, that's just my mantra. A little bit of adversity, you just need to suck it up and steer your way through it. (BCW2)

I had a big choice. This was a big gross moment for me. I did not want to just bail. I'm not a quitter. I couldn't understand how I could ever possibly do that. So I just hunkered in and found my happy place and tried to make the best of it. (BCW5)

I think it's being, um, not giving up, right? That perseverance because I think it's not about me as a person, right? If it is, then I would fix it, right? But it usually is about getting the problem solved. (KWW7)

He says, "Why are you doing this?" I said, "I want to do this. I want to prove that I can do this." And he said to me, "I don't know if you realize you don't have to prove yourself to us anymore." I'd spent all these years trying to prove myself. Trying to prove that I can do it. (KWM8)

I made it a point that if I wasn't at the top of the scale this year, I was going to find out what I needed to do to get to top of the scale next year or the year after and I was going to work towards that as a goal. So I was never accepting middle. It was never an option for me to be middle of the pack…I have an ambition to be rated right at the top and I don't care what I have to do to get there. (MSM7)

Hard Work Ethic

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Individual		
		Hard Work Ethic	+	+

Barsh and Yee (2012) identified a robust work ethic as an ability to go above and beyond what is asked to get the job done and it is considered a foundational strength that has fuelled workplace growth for women leaders. Both men and women from all case regions described hard work as an enabler of their career advancement. About half of the participants made references to having a high capacity for work, extra effort, working long hours, being a workaholic, and even "working their asses off." This theme was evident in early career stages but was particularly evident in references to mid-career experiences. Hard work ethic was described as an enabler that "paid off" in terms of career advancement and as a

personal value of which these executives were proud.

> *I worked very hard, but the hard work always pays off.* (BCW1)
>
> *I'm very hard-working, and unafraid to roll up my sleeves. I have energy reserves that are quite incredible.* (MSW7)
>
> *One thing that I know will never happen is I won't get outworked. I might get outsmarted but I won't get outworked.* (NSM5)
>
> *I work really hard to try to be a success and it does pay off.* (BCM4)
>
> *So there's really three things that guide me…a high level of integrity, operating as a team, and then just creating an incredibly high performance environment, and I think the best way to do that is by leading, and it's just everybody knows they've got to work their ass off, right?* (KWM7)

Some participants described hard work ethic as a necessity or an expectation given the culture of the organizations where they were working. They were responding to a high-performance work environment where extra effort was expected and in some cases they were creating the hard-work-ethic environment as a leader. Despite organizational pressure and expectations, hard work was described as an individual value and a self-imposed behaviour. Hard work was a common theme among men and women participants from all case regions.

Track Record

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Individual		
		Track Record	+	+

Fitzsimmons and Callan (2016) described track record as the dominant lens to validate if an executive candidate can match the demands of an organization. Both men and women in the present study described how they had developed a track record for exceeding organizational objectives. They described revenue and profit objectives being exceeded, customer satisfaction measures being achieved, timely new product introductions, successful project implementations, growth in

their portfolios, and a cumulative series of situations where they achieved results and developed a track record or a reputation of success. They became known as someone who could be “counted on to deliver.” Men and women from all case regions described their “track record,” or their “reputation,” or the consistent “results” they had achieved as an enabler of their career advancement.

Lyness and Thompson (2000) observed that women gave a higher rating to track record as a facilitator of career advancement than did men. Some studies have shown that results may not be attributed to women as easily as they will be to men. (Heilman & Haynes, 2005). In the present study, women described a need to do more for the same level of recognition (see Barriers, Organization) but both women and men claimed track record was an enabler of career advancement.

> *It's basically my track record. I believe (ICT Company), for the most part, that's been the history, to look at somebody's track record. Who delivers? Who provides results?... I had a track record.* (BCW1).

> *I had really demonstrated success at leading the engineering organization project teams for the commercialization of products. I had done so across, at that time, each of the areas of business… (which led to) that first transition from Program Manager to Director.* (KWW4)

> *You know, an enabler definitely is having a reputation for being able to take on new work, new teams, and add to your portfolio.* (NSW2)

> *They hired me probably because I had a proven track record. I had been in articles in the Globe & Mail, because we were the first (to do that) and there was a lot of interest around what I did.* (NSM7)

> *I really can't remember a time when we missed our numbers, so that drove promotions. I was never told that was the direct cause but I'm pretty sure results drove my promotions.* (KWM3)

> *We basically won half of what was on the street during my tenure there. We kind of (doubled) the business in five years. So again, good, good results and then it was time for me to move up.* (BCM7)

The success stories sometimes referenced “turn arounds” where the participant had been asked to intervene in a problem situation because of their reputation for delivering results and where this had led to further, larger opportunities. Their track record for delivering critical results had a “snowball” effect and enabled repeated

career opportunities that were sometimes “stretch” assignments and were highly visible (see Enablers, Organization).

Good Luck

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Individual		
		Good Luck	**+**	**++**

Research has shown that luck is a determinant of career success for women either as attributed by others (Sagas & Cunningham, 2004) or as self-perceived by women (Kirchmeyer, 1998; Soe & Yakura, 2008). Both men and women from all case regions described luck as an enabler of advancement. Luck in this context was positive for participants who described it. None of the participants suggested that “bad luck” had influenced their career. Most described luck in addition to hard work or in relation to people and positive relationships. References to luck were frequent and participants often used the term “luck,” or ‘”lucky” directly, although a few references to luck were indirect where “good timing” was implied as the enabler. Opportunities that emerged from economic cycles, restructuring, and growth of the technology sector were cited as will be described later in this section.

> *I was just really lucky. Most of my career, I feel like it's just been dumb luck. I wish I could say it was hard word and good choices. It was hard work, but hard work based on dumb luck.* (KWW3)

> *It may sound silly but I would say just luck, I think I've been lucky to find good people in my way and good opportunities in my way.* (NSW8)

> *I learned long ago in my career, despite my belief that it was all, 100% about meritocracy, it's not. There also has to be opportunity and timing, luck is a big piece.* (KWW4)

> *I really feel that yes, I worked hard. Yes, I had capabilities. All those things, but there's certainly, you know, there's some luck in it all as well.* (NSM3)

> *So I was to say, you know, “Why did I not compete for any of the jobs back earlier in the day?” I think there was sort of that, you know, preparation and opportunity, right?* (BCM2)

Although both men and women described luck as a career enabler, the theme was strongest among women. No men from the Kitchener-Waterloo region directly described luck and the references from men in the BC case region were indirect. Of the men who described luck as an enabler, most were from the Halifax case region.

Relationships

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Individual		
		Relationships	**++**	**+**

Developing personal relationships in the workplace has been identified as an enabler of career success (Lyness & Thompson, 2000; Mainiero, 1994; Tripp-Knowlls, 1995) and is generally encouraged organizational behaviour. Men and women from all case regions described relationships as contributing to career advancement. Relationship building skills were cited as having a significant influence on career progression for both men and women; however, the theme of relationships was strongest among men. Women seemed to discover the importance of relationships later in their careers whereas men benefited from them earlier. Men more frequently described their "network" of relationships as an enabler than did women. This is consistent with the "old boy's network" barrier that women described (see Barriers, Individual). Despite the more delayed influence of relationships as a career enabler for women, both genders described relationships as a key career influence.

> *I didn't have as good an appreciation in the early days for (relationships). I certainly do now. It's really my super focus now and that is building those relationships with your peers, coming to understand what their needs are and demonstrating that you have their vested interest at heart.* (NSW5)

> *I built relationships with all the companies and all the people in (them). So when I asked for a favour, they were actually willing to do it. Those are the key connections that you build up and they make your life easier.* (BCW4)

I think number one would have to be relationships. I think it was reinforced when I went to (non-ICT Organization), the importance of that. But I always made that a very high priority. (KWM8)

You know, the more I get into this and the longer I'm in this profession, I realize it's more the people you know. (NSM8)

Career literature rarely fails to mention networking and development of relationships as a key strategy for the achievement of career goals (Seibert, Kraimer, & Liden, 2013). Networking was identified by participants in the present study as a key strategy among women in the ICT sector, consistent with Gumbus and Grodzinsky (2004). Creating opportunities for women to network was recommended by Ezzedeen and Ritchey (2009) as a policy to advance more women leaders. Although both men and women identified this strategy as an enabler of career advancement, men seemed to describe a more systematic and intentional approach to the development of their relationships and their networks. Women described their network as something they had developed later in their careers where men seemed to tap into this resource sooner.

I have an expansive network and I think it's critical for women to be able to foster a network, maintain a network, engage with a network. I was in (location) for maybe a year when I got named as one of the most influential women leaders in the (location). (NSW7)

I know who to reach out to when I'm looking for something. Whether it's for me, as a career role, but also if I need help with something or I'm looking for a person to come join my organization, I know where to go. I'm pretty helpful for others because I know who to connect them to. So the network is a massive enabler. (BCM5)

Both men and women described networking and relationship building skills as being important enablers of their career advancement. This is consistent with another broader theme identified, namely that women generally considered business skills as being important enablers of career advancement ahead of technical skills as will be described later in this section. Relationship skills are especially important for women in challenging situations (Morgan & Trauth, 2006). Women are considered to have greater “people skills” (Bruckmuller et al., 2014), although men are more often recognized and valued for them (Clayton, Hellens, &

Nielsen, 2009). Both men and women claimed to be adept in this skill area with positive career results.

> *I have always been described as being very good at building relationships and communications and so I think those intrinsic capabilities were key to achieving some of those role transitions.* (KWW4)

> *I always had the ability to communicate well and influence people over whom I had no direct control, and manage the relationships well.* (BCM2)

Some of the relationships described by interview participants were with mentors who provided career guidance and support or sponsorship where someone was "looking out for them" and deliberately taking steps to advance their career.

Mentorship & Sponsorship

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Individual		
		Mentors & Sponsors	+	+

A lack of role models has long been considered a problem in advancing women in the ICT sector (Pfleeger & Mertz, 1995) and mentoring has been explored as a solution (Headlam-Wells et al., 2005). Mentorship is a form of social network support in the workplace that has been shown to have a positive influence on career outcomes (Seibert et al., 2013). Mentoring is said to include psychosocial support related to counselling and overall well-being, as well as career support related to advocacy and sponsorship (Tharenou, 2005). Women and men described mentorship relationships as a balance of psychosocial support and advocacy.

> *Over the course of 30 years, I could probably think of at least, you know, four or five people that I had as mentors, both for professional mentorship but also just mentors about, you know, life's goals and all that kind of stuff. They're key people that made a difference in my career for sure.* (KWM3)

> *I had at least two men in my life, bosses, who really wanted to see me succeed and so they pushed me and were hard on me and I appreciate in*

hindsight how hard on me they were because they wanted me to develop the skills, they wanted to have women move up the ladder. (BCW2)

Either through formal programs or informal relationships, mentoring in the ICT sector is gaining more attention as a career enabler (Adya & Cotton, 2012), especially for women (Gumbus & Grodzinsky, 2004). However, both men and women described how they had experienced its positive effects in their careers. Some participants described organizational programs related to mentoring as will be explored later in this chapter (see Enablers, Organization).

Sponsorship is a relationship where the mentor goes beyond traditional advice and guidance to use their influence in advocating for an individual and is considered as a higher level of career support (Ibarra et al., 2010).

And there was a lot of sponsorship, right? So your career went up as your sponsor's career went up. So, you know, I look at the guys at (ICT Company) who became the true leaders. I knew them from early on in my career, and they obviously thought a lot of me, so as they'd get promoted, I'd get promoted. (NSM6)

These are people who took a vested interest in young talent and it wasn't just (me) by the way, you know they were doing this everywhere. This was a calling for them almost and a mission for them. They truly made it their focus to offer repeated development opportunities, exposure opportunities, and they continue to do it. (NSW7)

Although relationships were typically described as mentorships, there was evidence of sponsorship as well among both women and men participants. Mentorship and sponsorship sometimes helped to develop important skills and this was identified by participants as another enabling theme.

Business and Technical Skills

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Individual		
		Business Skills	**+**	**++**
	-	Technical Skills	**++**	**+**

Skills were described as an enabler of career advancement with broad

categories emerging as either technical or non-technical which were identified as business skills. Thus, there are two skill themes. No references were made to specific technical skills, whereas business skills were sometimes described in further detail, specifically relationship management and communications skills. Problem solving skills were referenced frequently as a business skill, as well as references to creativity. One participant, a male, specifically highlighted “real technical grounding” as a unique enabler relative to “some of these other IT executives,” but most participants consistently described a balance of skills as an enabler. Where men did not specifically reference a lack of technical skills, some women did, and they considered their non-technical skills as a technical gap. This may relate to the lack of confidence barrier expressed by some women participants, as previously discussed, was sometimes linked to a lack of technical ability (see Barriers, Individual).

Relationship management and communication skills were often referenced as enablers, which is consistent with the discussion earlier in this section about the enabling nature of relationships. Both men and women described these skills, in combination, as enablers, especially women.

> *It's a combination of skills. I have probably a more holistic view of how things should work, rather than the nitty gritty details of an algorithm. My value add is really about the holistic view it's about the customer experience, it's about managing the teams.* (KWW7)

> *I push back from the code point of view because I don't pretend that I can do the developer's job but I give them scenarios and say, “Well, what if?” And “How come?” And why don't we look at it this way and let's think about problems from a different point of view. So I think the creative part of me is a foil or a balance to my (lack of) technical understanding and another enabler.* (BCW2)

> *My new CIO called me up and said, “Look. There was a choice between you and another gentlemen and I can't put that gentlemen in front of the ELT [Executive Leadership Team]. He doesn't have the communications skills. He doesn't have the presentation skills. So I choose you, do you want the job?”* (KWW6)

A study of ICT consultants explored critical career success attributes and found, from entry level to senior, technical skills were expressed as critical one

third as frequently as ability to manage relationships and on par with both interpersonal and verbal skills (Joshi & Kuhn, 2007). The same study found men were more likely to be described as having technical skills and knowledge compared to women. Men in the present study seemed to take more credit for both technical and business skills.

> *I went from an entry level software designer to president of a business unit in fifteen years. I was good at what I did. It was a function of having the combination of business, technology, and personal skills. My heritage of being a computer scientist, you'll notice in my career I kind of jumped in and out of that.* (NSM8)

> *Despite the fact that I've got a technical background and I've got a technical education, I am actually a very right brain person. I think in terms of patterns and that sort of thing. I'm comfortable with numbers but I wouldn't be the best mathematician in the world just because I would always want to step back from that level of detail. I think it was that sort of big picture thinking, being able to see the broader connections and bring that top-down perspective.* (BCM8)

The importance of business knowledge has increased over time relative to technical knowledge in ICT (Lee, Trauth, & Farwell, 1995). Participants seemed to experience this transition during their careers and recognized skills as one of the many enablers categorized at the individual level. While many enablers were described in the mid-career stage, individual category, only one theme emerged in the family category as will now be described.

Family Enablers

Support and Encouragement

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Family		
		Support & Encouragement	**+**	**++**

Family was described previously as a barrier mostly related to the responsibility of caring for children and associated travel or relocation restrictions, but family was also identified as an enabling source of support and

encouragement. Although both women and men described spouses who encouraged them to overcome challenges and pursue opportunities, most of these references came from women. Relationships were generally described as supportive, more so by women. Parents were also acknowledged for providing childcare support. Some women related their experiences balancing family and work demands as having developed their planning and time management skills, which made them more effective at work.

> *I would say that being a mom is an enabler because, you know, it's so true. You've got to do five things at once and you figure stuff out on the fly all the time…being a mom, yeah, for sure, has helped me time manage… when you only have a few hours to do something, you get it done because you have to. You don't have any choice.* (BCW2)

> *I'm going to give a lot of credit to my husband, he puts up with a lot of crap with me. We've been married (many) years and he accepted the fact that, you know, I would take off for a trip to Asia, like I'd leave for work Monday and then go call him and say, "Hey, by the way, I'm going to Hong Kong for four days. I'm leaving tonight. Good luck with the kids, their schedule is on the calendar."* (KWW8)

> *I was on the road all the time and it was odd because we were a single income family and he was home with the kids and I'm sure for a long time a lot of the neighbours thought we were divorced. [Laughs]. Because I was never home, he was home all the time and we have different last names.* (NSW1)

> *I was blessed with a very supportive family. My wife stayed home when the kids were small and then she restarted her career when the kids went to school. I have supportive parents. They've here in Canada with me and ah, nothing but good things to say. So I'm no hero. If I had taller obstacles at home or somewhere maybe my story would be a little more dramatic but with the support I have it would take a dumb person not to take advantage of it.* (KWM1)

With a few exceptions, the majority of participants were members of families where both partners worked outside the home. Both men and women described career adjustments that their spouses had made to allow the study participant's career to advance. These observations were balanced by previously described situations where spouses resisted travel or relocation arrangements, thus being a barrier to advancement for participants. References to the support of children and

parents as enabling forces were offset by references to the responsibility of child and elder care, as well as women's career's stalling around maternity leave periods (see Barriers, Family). Overall, family was a barrier to career advancement despite many participants describing it as an enabler.

Organizational Enablers

Growth & Restructuring

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Organization		
		Restructuring	+	+

The ICT sector has grown dramatically since its inception. Over the more than 55 years since ICT labour market information was collected in Canada, the sector has grown to employ 816,200 and its contribution to Canadian GDP has grown from zero to 4.4% in 2016. Since the 1980s a wave of corporate restructuring and record levels of acquisitions have become part of the business landscape (Cappelli & Hamori, 2005). The dot com era from 1996 to 2001 was like a "gold rush" (Tapia, 2006). Participants described economic cycles and related growth, including organizational restructuring as having both positive and negative impacts on their careers (see Barriers, Organizational). While women generally felt negatively impacted by downward swings, both men and women felt the momentum from positive swings as career enablers.

> *I mean when I think about the timing of why things were as good as they were, that whole Y2K and Sarbanes-Oxley, oh my god, right? That growth was (emphasis) our business and helped my career a lot.* (BCW5)

> *I came back (from maternity leave) and there was a satellite office in (international location), a satellite office in (other international location), a satellite office in (yet another international location) and they were all up and running sites and I was like, "Holy crap. How did you even do this in a year?" [Chuckles]. So it was kind of crazy growth and opportunity.* (KWW2)

> *They had acquired a company and the acquisition did not go well. It was another software company. I'm sitting there (as a guest) at the end of the Board meeting and (he) comes out and he approaches me and he goes,*

you know, "Do you want to run a new software business unit that we're going to form?" He gave me the characteristics and I think at the time, like right on the spot, I went, "Yeah." So that's how I got to be President. (NSM6)

So they turned around and basically bought our company... I got promoted as a result of a corporate restructuring…they said, "We want you to come and be part of this." There's been a few cases like that, where I can say just because, I suppose I was doing a good job or had a nice smile or something I got this opportunity to take on a bigger role. (BCM8)

The growing and dynamic ICT sector and the related restructuring from merger and acquisition activity contributed to career advancement through change in the organizational environment or outright change of organization. Maintaining person-organization fit was another theme that emerged as an enabler while also being a barrier, when fit was lacking, as will now be described.

Person Organization Fit

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Organization		
-	-	Feeling of Person-Organization Fit	++	+

Participants described feelings of "chemistry" with the organizations where they worked and how they thrived in environments where they "fit." Sometimes the fit related to the vocation or job including the type of business or the business model such as project-based organizations or the consulting profession. Organizational culture has been described as rooted in the values, beliefs, and assumptions of an organization and its members (Roldan, 2004). Participants described a good fit with elements of organizational culture, including people orientation, teamwork, and the pursuit of innovation. A bad fit was also described by some participants, particularly women, who cited frequent situations where they were "the only women in the room" (see Barriers, Organization). Fit was described as an enabler more so by men, which may be related to enabling relationships that were also stronger for men (see Enablers, Individual) and included references to "the old boys club." Men and women described situations where fit with the

organizational culture and values influenced their career choices. Men especially, described good fit during career experiences where they advanced and bad fit as a basis for making career changes where the typically stalled their advancement.

> *I found my dream job in an organization that was phenomenal. The people… it was just incredible chemistry and I thrived.* (BCW5)

> *The culture of the place was very entrepreneurial and that's built in the guys that started this company and how they ran it. They're very transparent with information, it's a very open environment. It's a real like team oriented place, people are encouraged to collaborate and just work freely.* (BCM6)

> *You know, another enabler that made you successful was to understand the corporate culture and understand your personal way of managing and your personal ethics quite frankly and does it fit.* (KWM3)

> *These guys really, really had a touch. A way of getting the right people that could not only work together but could really make a contribution as an individual, as well. I got jazzed with other variants on that sort of theme. I get jazzed working with smart people and it's, um, I guess one of the reasons that I've enjoyed technology so much is that it's changing all the time and therefore it has attracted a lot of smart people too.* (BCM8)

Participants seemed to thrive in organizations where they felt a good fit that was sometimes associated with an organizational culture based on a value for people and collaboration. Fit was described as an enabler by participants from all regions but was strongest in BC and particularly among men. Culture is sometimes associated with the human resource function of organizations that is frequently the function responsible for management development programs described by participants as an enabling career influence.

Programs

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Organization		
-	-	Programs	+	+

The participants described human resource programs including development programs as career advancement enablers. “High potential”

employees are individuals in organizations recognized at a point in time as its likely future leaders (Dries & Pepermans, 2007). The study participants reflected on having been "chosen," or "tapped on the shoulder," to participate in a development program. Some of them described having been identified as "high potential" or being on a development "track." These types of experiences were the most common policy or program related influence acknowledged by participants as having impacted their careers. Performance management programs and relocation financial assistance programs were also mentioned but to lesser degree. The participants described the impact of being "groomed" for leadership roles. Some participants reflected on how these programs had changed over the years such that more contemporary programs are driven more by the individual employee and less by their manager, which is consistent with the boundaryless career (Sullivan, 1999).

> *As soon as I hit the (management) role, I was invited to participate in monthly presidential presentations. The President of (ICT Company) would be in Toronto and you were invited to go so you were all of a sudden exposed to all the different pieces of (ICT Company) and that was pretty sweet. I was fairly young and I felt like I had been groomed and promoted intentionally because it was every year and a half that those moves kept happening.* (BCW5*)*

> *I was designated high management potential or HMP. I didn't really know what that meant and I didn't know why I was chosen and it was probably after I'd been there a few years. I can't remember but um, was designated an HMP, which just meant you had an opportunity to take on more work usually and, but they would just keep an eye on you and watch you. They would kind of steer you through jobs.* (BCW6)

> *The model was that your Manager kind of groomed you and took you through, you know, moved you up the ladder. That certainly has changed dramatically. I think it's an industry change but I would say you own your career now.* (BCM5)

> *There was a dual assessment where a manager and the staff member would assess various areas and it was based on the (organizational) values. It was a very heavily values-driven organization. So (the program) drove a conversation, it drove developmental exercises. It drove action that really helped advanced you. And it helped self-awareness and it really helped individuals understand how the organization saw them.* (NSM8)

Sometimes the programs were formal in a classroom environment, and sometimes they were informal meetings or discussions followed by actions that led to new opportunity and advancement. Development programs sometimes led to stretch assignments that were described as enablers, particularly for women.

Stretch Assignments & Visibility

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Organization		
		Stretch Assignments & Visibility	**+**	**++**

An early use of the term “stretch assignment” was offered by Lyness and Thompson, (2000) in a study where developmental career experiences of women and men were explored, including career mobility across different functions or types of responsibility in organizations, as well as the range of risks that executives were exposed to in their positions. The term has been used in other studies since (Beeson & Valerio, 2012; Fulmer et al., 2009; Hoobler, Lemmon, & Wayne, 2014), to refer to experiences that required the incumbent to take on new responsibilities, perform tasks that were unfamiliar to them, or work in a context that was different from their past experiences. Men and women both described stretch assignments as enablers of career advancement. They were invited to assume new positions, sometimes in new locations, with increased or different responsibility, and often in these situations the participants did not believe they had “the right stuff” to do the job.

Stretch assignments were generally described as highly visible and this meant that the performance of participants would be scrutinized and their results would be widely known. Super and Hall (1978) argued that the visibility of stretch assignments may relate more to their positive career impact than the actual assignment results. No stories of failed stretch assignments were shared; quite the opposite, stretch assignments were described as success stories that led to learning and more opportunities. Although evident, the extent to which stretch

assignments were connected to a high potential development program was less clear than the consistent theme of executive sponsorship and support for the appointment. Although typically informal, without any internally published job competition, these stretch assignments were the result of a selection process where participants had been “hand-picked” and then “tapped on the shoulder” to be given an opportunity.

> *(The President) says, “Look this (project) thing,” he said, “This is your baby” and he said, “So I want you to figure out your plan and I want you to go and show the rest of the country what we can do and how we can break the mold on this (project).” I had been given a challenge and at the same time given the support, right? “We believe in you. You can do this.”* (NSW6)

> *It's been the executives each time saying to me, you know, “I think you can do more. I think you deserve more.” They're the ones really that have identified it along the way and have literally knocked on my door, saying, “Look. Here's a new job. What do you think?”* (KWW6)

> *The CEO asked if I would lead the overall integration which was a huge opportunity because then instead of just meeting the people in the partner business, I met everybody. I met every global leader.* (BCW6)

> *The senior executive of the day tapped me on the shoulder and said, “We have a big project for you.” I said, “Okay. What's up?” He said, “We're developing new state-of-the-art application for (function). It's a one of a kind in the world. It's being done by (team), would like you to manage it?” And I said, “Okay. Like, I've never done anything like that before.” He said, “That's alright. You'll figure it out.”* (NSM2)

The momentum from stretch assignment successes, especially earlier in a career, was also observed as a precursor of later success (Vinnicombe & Singh, 2011). This is consistent with the experiences of study participants who described how they learned, developed relationships, and were encouraged by the senior executives who supported their stretch assignment appointment.

5.3.4 Mid-Career Stage Enablers Summary

Following is a summary of the interview themes related to mid-career enablers of career advancement. The text in bold cross-references to the preceding pages in this chapter that provide detailed descriptions.

1. **Innovation and risk taking** behaviour was an enabler of career advancement for both men and women, more so for women.
2. Women described individual **initiative** as an enabler of career advancement, more so than did men.
3. Both men and women described **determination** as an enabler of career advancement. Men seemed determined to win where woman were determined to overcome a challenge.
4. Both men and women described good **luck** as an enabler of career advancement.
5. A **track record** of positive results was an enabler of career advancement for both men and women.
6. Men and women described personal **relationships** as an enabler of career advancement, but for men, relationships were a stronger influence and their networking for relationship development was more intentional.
7. Men and women described **mentorship and sponsorship** as career enablers.
8. Women and men both described **business skills** as an enabler of career advancement more so than **technical skills**, particularly women. Communications skills, problem solving skills, and customer relationship skills were frequently cited as key business skills.
9. Family experiences and **support from family** members were a career advancement enabler, more so for women than men.
10. ICT sector growth and organizational growth, mergers, acquisitions, and **restructuring** were enablers of career advancement for men and women.
11. Sustained **person-organization fit**, especially related to organizational culture, was an enabler more so for men than for women.
12. **Professional development programs and visible stretch assignments** developed career momentum that was an enabler for both men and women.

5.3.5 Mid-Career Stage Enablers Regional Differences

Meaningful regional patterns did not emerge related to mid-career barriers and enablers to advancement. Selective coding and crisscrossing of the data, as

described in Chapter 3, was undertaken to test for regional patterns, but meaningful differences were not found. Following are some observations related to slight regional differences.

Ontario participants made fewer references to luck during interviews, and their references were more casual than those of participants from other regions where luck seemed to be a stronger career influence. Ontario participants were the most educated, accounting for the highest number of university degrees per person by a small margin. Hard work might be considered as an alternative influence when compared to luck, but hard work was consistently described as an enabler in all regions. Nova Scotian participants seemed to describe relationships as a career enabling influence more so than participants from other regions. As the region with the smallest population overall this might underline the importance of “who you know” and could account for this slight regional difference. Person-organization fit seemed to emerge as a stronger theme in British Columbia, although it was an influence in all regions. Fit was both an enabler of career advancement and a barrier. Participants from Vancouver and Victoria also were least likely to have been born in the region and had the highest incidence of divorce. It is possible that these executives were in pursuit of fit in other aspects of their lives, not just their careers. The regional patterns that emerged were only slight and arguably are in part the result of establishing a research objective to find them. They are offered here more as evidence that patterns were sought, consistent with the research questions, yet meaningful patterns were not found.

The influence of participants’ frequent travel across Canada and many reports of participants having lived and worked in other case regions of the study may have contributed to this result (see Chapter 6). Thus, of the twelve cases explored, results related mostly to the three cases at the Canadian level. The lack of regional differences was also evident in the Early-career and Mature-career stages of the analysis with patterns emerging only at a national level.

5.3.6 Mid-Career Stage Barriers and Enablers Summary and Model

Interpretation and analysis of interview data during the mid-career stage identified 25 career influences across four categories of individual, family, organization, and society. Influences could be barriers or enablers, thus the 25 influences represented the potential for 50 barriers or enablers. Across both genders more enablers emerged (n=30/50) than barriers (n=15/50). While enablers were described by both men (n=15) and women (n=15), women described substantially more barriers (n=12) than did men (n=3). The enablers described were frequently traits or skills at the individual level for both women (n=10/15) and men (n=10/15). Barriers were more frequently external to the individual for both men (n=3/3) and women (n=10/12), particularly at the organizational level. Thus, enablers were intrinsic and barriers were extrinsic as will be discussed in the following chapter. One factor explored intentionally during the conversational interviews did not seem to influence the careers of participants, namely, organizational policy, which was described as benign by participants and with an attitude of malaise. No participants described policy as a career influence. Overall, the barriers and enablers described were consistent with extant literature. There were no meaningful regional differences in barriers and enablers, instead a national pattern emerged. Small regional differences included fewer references to luck among Ontario participants, more references to the impact of relationships in Nova Scotia, and more references to person-organization fit in British Columbia.

Table 13 lists the career influences by category, cross-referenced to descriptions in the previous sections (see Section 5.3.2 and 5.3.4) with key phrases in bold type. Career advancement barriers in the model are denoted by a - symbol while enablers are denoted by a + symbol. Where an enabler or barrier was described by both men and women, a double ++ or double -- is used if the barrier or enabler was stronger for a particular gender. For example, technical skills was an enabler for both men and women but was a stronger influence for men, thus the model reflects a ++ symbol for men and + for women. The only factor found to have not influenced careers, policy, is denoted with a = symbol and is grouped with a related influence, programs, together denoted with a =/+ symbol.

Table 13. Model of barriers and enablers to career advancement

Barrier		**Category**	Enabler	
Men	Women	Mid-Career Advancement Influence	Men	Women
		Individual		
	-	Self Confidence & Assertiveness		
		Innovation & Risk Taking	+	++
		Initiative	+	++
		Determination	+	++
		Hard Work Ethic	+	+
		Track Record	++	+
		Luck	+	++
		Relationships	++	+
		Mentors & Sponsors	+	+
		Business Skills	+	++
	-	Technical Skills	++	+
		Family		
	-	Care Responsibilities		
-	-	Business Travel		
		Support & Encouragement	+	++
		Organization		
	-	Business Cycles & Downsizing		
	-	Being in a Minority		
	-	Politics & Social Network Exclusion		
-	-	Feeling of Person-Organization Fit	++	+
=	=	Policy / Programs	=/+	=/+
	-	Inequitable Compensation		
-	-	Recognition & Commitment Bias		
	-	Hiring & Promotion Bias		
		Growth & Restructuring	+	+
		Stretch Assignments & Visibility	+	++
		Society		
	-	Leadership Stereotypes		

5.4 The Mature-Career Stage

Towards the end of the interview, participants were asked the question, “How do you feel about your career? What are you most proud of, and do you have any regrets?” In general, participants described their careers positively. No respondents indicated that they were not satisfied or were unhappy with their career. This is not surprising given that the primary criteria for participation in the study was achieving the level of “executive,” where participants had at least 50 people reporting to them for at least 5 years. Based on this criterion, participants would have achieved at least objective career success (Arthur et al., 2005, p. 179) in the sense that, outwardly, they would have the status of a high level position. Some participants highlighted external indicators in answering the question where some described more subjective career success factors that were internal to the individual (Arthur et al., 2005). Many participants offered both objective and subjective career success factors when asked how they felt about their career and what made them most proud.

Subjective and objective success factors can be contradictory. Some participants reflected on their objective success as a source of pride and their objective lack of success as a regret. For example, some participants were proud that they had significant job scope and responsibility but regretted that they had not spent more time with their family. This subjective-objective duality of career success with personal failure (Korman & Korman, 1980) was evident in a few participants. Comments about regret were more reflective and distant, often prefaced with, “I guess,” or “I suppose” where those related to pride were offered with more certainty. A few participants described family considerations as a regret, most of which related to not spending more time with family, with one offering a regret for not having had children of her own. In reflecting on their careers, the vast majority of participants focused on children as source of pride.

5.4.1 Career Pride

Sources of career pride emerged across men and women from all regions including: developing teams and individuals, building or growing a business, scope and scale of responsibility, and family or community contribution.

The strongest source of career pride among the participants was their contribution to the development of teams and individuals.

The strongest source of pride among the participants was related to how they had contributed to the development of teams and individuals. This theme was evident across gender and regions and is consistent with late stage career development behaviour where participants increasingly focus on the development of others through mentorship or sponsorship (Dalton, 1989) or in ways that are consistent with the role of parent according to Super (1980).

> *I am most proud of the growth and development of key people, and there's always a number who stick out. I think it's like teachers who always remember certain students for different reasons.* (NSW5)

> *I've done a lot of really cool things. I think though at the end of the day, what I'm really proud of is not the things that I've accomplished but the people whose lives I've been able to affect in a really positive way just by doing my job.* (KWW3)

> *Beyond the personal acknowledgment that I'm a significant contributor to a large team, and that's relatively obvious, my biggest satisfaction is seeing the development of the teams that I work with, and that I'm leading, and enabling them to be successful and to progress their own careers.* (BCM7)

Barriers and enablers to the career advancement of the participants revealed enabler themes in the areas of networks, relationships, and mentorship/ sponsorship (see Enablers, Individual, and Organization). The participants often reflected on how a manager had supported them at various times in their career. They often spoke about these relationships in terms that would suggest they wanted to “pay forward” the service that they had been provided.

> *I'm hopeful that I can be that mentor, the way those guys were to me in the final years of my career and that then I can sort of take those pieces and continue doing the volunteer stuff that I'm doing. (BCW5)*

You don't get where you are without having good mentors and people putting faith and trust into you, and stretching your abilities. And that's something I try to do now with the folks I coach and mentor. (BCM7)

They helped me with my career. They both had about 15, 20 years on me. That's what I do now, I help people when they're ready to start looking at their career seriously. (NSM1)

Super (1980, 1990) suggests that career development is a process of implementing a person's self-concept and that at any one moment an aggregate of roles that one is assuming, including citizen, worker, and parent, influence career decisions and behaviour. In describing the strongest source of career pride, participants who were generally at late stages of their careers, disclosed how, when looking at future leaders, they saw themselves and found satisfaction in efforts they had taken to advance the careers of others who were at earlier stages. The executives described this as a calling or a social responsibility, possibly in their role of citizen and parent as described in Super's models. In this sense, the strongest source of career pride was intrinsic whereas the other sources of pride were largely extrinsic in nature.

Start-ups and turnarounds were a source of pride for women and men.

Pride in having built a business or successfully turned around a business was another theme that emerged from analysis of responses related to how participants felt about their career. This theme was evident across men and women in each region although to a lesser degree among women in Halifax. They felt a sense of accomplishment in growing businesses and realizing opportunities.

Looking at the pluses or minuses of my career, a personal thing is the establishment or creation of (ICT Company) as an entity in (Location). I find it personally gratifying to start with three and then be personally responsible for (many employees) and have the thing here for (many years). (BCM3)

The main thing (I'm proud of) is the ability of the company to rise to the challenge of developing and supplying the technology to meet the insane demand that resulted from the (technology) effect. The market wasn't willing to wait, it would have gone to our competitor had we not been able to rise to the challenge, so that's probably the highlight of my career. (KWM5)

They were on the verge of losing the company. When I started, they weren't paying all their bills, and by the time I left, they had record profits. (KWW8)

> *So I'm very proud of the fact that we've turned the company around. Very proud of the fact that we're two times the staff size, and three or four times the revenue we were at the time, and we're continuing to expand.* (NSM5)

The satisfaction associated with growing businesses is arguably similar and may be related to another career pride theme with a more extrinsic success orientation, namely, the scope and scale of responsibility of executive participants.

Scope and scale of responsibility was a source of career pride. How others, including family members, perceived their status was important.

Scope and scale of responsibility was a source of career pride. The participants described how they felt their workplace accomplishments were significant because they had held a range of "big jobs" and had been influential in organizations. The individual accomplishments were unique to each participant, but the source of pride had a consistent theme of scope and scale of job responsibility, sometimes with an emphasis on the job title. Being the youngest or the first to achieve a prestigious job level or title was cited, especially earlier in careers. A few participants described failure to achieve a particular job title as a career regret or setback (see Career Regrets). Scope and scale references often came back to the dominant intrinsic theme of developing teams and individuals by connecting the job title with how it was perceived by the people they had worked with or even with family who had helped them to succeed.

> *I was super proud when I was promoted to Director because I was promoted to Director before my husband was promoted to Director and, not that that's anything but it kind of just, you know, it was just nice and I was super proud. The people that worked for me were super proud too because some of them had worked for me for eight years.* (KWW2)

> *(My kids) they would come in and see the (many) people in the operation centre and they knew that all of them worked for me, right? I take pride because my kids can take pride in what I did.* (BCM2)

> *I'm effectively the son of a (Province) farmer, right? I didn't have two nickels to rub together when I went into university. I paid my own way so I look back and I go, to get from there to here as CEO (of ICT Company), I guess I'm just proud of what happened over thirty years and how I ended up with the experiences I've had, the opportunity I've been able to give to my (children), I guess the whole package.* (NSM6)

> *I'm most proud of the ability to have maintained a really healthy, work-life balance and I've moved up to quite a senior role in my company but I did it where I was still able to coach my boy's hockey teams every year. I was able to coach them in baseball, so I was very, very involved. I was able to maintain a healthy marriage with my spouse who also works. I've always been very proud to be able to say I worked for (ICT Company).* (BCM5)

References to family members perceiving and benefiting from their career success were not always positive. Some participants described work-life balance successes, and issues, in response to questions about how they felt in relation to their career. Although hard work ethic was described as an enabler, a lack of work life balance was also described as a career regret, especially for women.

5.4.2 Career Regrets

Upon reflection, both men and women participants were reluctant to describe regrets they had about their careers, sometimes indicating that they maintained a positive outlook and, "preferred to see the glass half full." Instead, lessons learned were sometimes offered where participants described how, if given a second chance, they might do things differently. Where regrets were offered, broad themes emerged in the areas of work life balance and missed opportunities.

Having "no regrets" about their careers was an initial view described by some men and women, particularly men. Upon reflection, regrets emerged.

The participants demonstrated a high level of contentment with their careers and were much more forthcoming with descriptions of career pride than mentions of regret. Some were adamant that they had no regrets, others saw career setbacks as learning moments. One male participant, the youngest, refused to describe regrets, and although happy with his career progress, expressed discontent with his career in a manner that motivated him to do more. The "no regrets" theme emerged across men (n=7/24) and women (n=7/24) from all regions. Some participants made statements about why they had no regrets where some participants offered no explanation.

I don't focus on regrets because they don't buy you anything. It doesn't mean once in a while, things don't trip me up but I really don't have any regrets. (KWW8)

Any regrets? I don't think so. You know in some ways I only ever see the glass half full. There's things you could have done better or differently at the time, you know like I still own Nortel stock. [Chuckles]. But no, I don't really have any regrets. (NSM3)

I don't look back. I can't, I don't have any regrets. I really don't…there's a few of those opportunities that I look back and wonder what if? But not with any anxiety, just with curiosity. I think I'm making the biggest difference I can right now, here. (NSM7)

On the one hand, I can't think of a regret. You know, I don't regret any of the decisions that I've made. I'm very happy. I'm very pleased with the outcomes. (On the other hand) I don't think I'm anywhere near done yet and I feel like I've only started to scratch the surface of the challenges that I've got in front of me. So I'm still dissatisfied, although, happy with the progress so far. (KWM6)

The interview protocol consistently included the question, "Do you have any regrets?" Although the "no regrets" theme emerged across genders as an initial response, particularly among men, regrets emerged as the conversational interview continued. Both genders, women especially, made references to family sacrifices they had made in order to advance their careers and lamented how they had traded non-work time for work time which they regretted.

Maintaining a healthy work life balance was a source of pride for men more so than for women who reflected on the lack of balance as a career regret.

Both men and women described family as a barrier more so than an enabler of career advancement (see Enablers, Family and Barriers, Family). Women, however and more so than men, regretted the sacrifice of trading family time for work time and the implications of not focusing more on family or their personal lives. Women also described their dedication to work (see Enablers, Individual) and how they were driven to succeed. It seemed the dedication to career described by women participants was considered as a trade-off relative to family dedication.

I certainly regret a period of time at (ICT Company) where it was very, very difficult. My son who is now (an adult), I think certainly took the brunt of that

and probably would have been better served if I'd been a little more present, if I'd done the juggling a little better. Um, he's had a bit of a rough go. Some of it's him and those are his choices but I really believe there were some real formative years in there that I was distracted more than I should have been distracted, so I very much feel motherly guilt. (KWW3)

I never had my own children. I have them through marriage but I never had my own. That's a big regret. (KWW4)

Regrets, well yeah. Perhaps not better balancing my personal life and my career in the early days and being as driven as I was in my early days and not respecting the importance of relationships, not just my personal relationships but my business relationships. I wish that maturity and that wisdom had come earlier. (NSW5)

Some of the work-life balance family regrets were shared in a very personal way such that when participants were asked, “Do you want to talk about that?” they declined and the conversation moved on. Where other regrets were described, they generally related to missed opportunities.

Men and women regretted missed career opportunities or failures to realize important lessons earlier in their careers.

Men and women regretted missed educational opportunities, missed assignments in other countries, and failure to learn how to overcome career barriers, such as a lack of aggressiveness or a lack of confidence. Discussions about regret sometimes related to the “road not taken” and “lessons not learned soon enough,” and were mostly described as considerations without significant consequences but for some, they were seen as career setbacks.

The only real regret I have is when I was a little bit younger, I should have maybe taken opportunities to move elsewhere and gotten a little bit broader range of experience. So although I've managed in North America, a little bit in Latin America, I don't feel like I've had the experience of actually working in another culture. So that would be a do-over, my only do-over. (KWM3)

If I went back 15 years, I probably would have pushed on my younger self to be a bit more aggressive in creating opportunities. (KWW6)

Regrets goes back to before work but it starts with education for me. I mean there were some bad decisions made by me when I was younger, and made of steel, that I may want to have back but at the same time, you know, all those things helped shape you and turned you into what you are. (NSM5)

> *Sometimes I think if I chose a different career, or even this one but took even bigger chances, like starting my own company, I might have felt more fulfilled to some degree as though I really did something special. I think I had a good career but I don't necessarily think I did anything, you know, special. So I think that's a, that's somewhat of a regret.* (KWM4)

Early attitudes about risk taking and failure to take equity positions in companies where they worked were sources of regret. In hindsight, although financially successful, some participants lamented not achieving more financial success.

Both men and women regretted lost financial opportunities, including not securing jobs that paid more and not having equity in companies where they worked.

While the participants consistently expressed contentment with their careers some men and women regretted not "cashing in" on more of the financial success enjoyed by the ICT sector. Although there were references to being well paid, more references were made about compensation gaps including some references about the lack of equity and earnings not measuring up to that of their peer group.

> *I should have done it on my own but as much as I talk about the confidence to take space, that's the step I couldn't take ten years ago. Because I think especially in this type of organization, you take on those risks and you put in the blood, sweat, and tears. The reality is I don't own (ICT Company), I don't own any portion of it…ten years ago it probably didn't matter that much to me but at this point in time, it matters more…as much as I take more risks than some, I probably regret not taking more.* (NSW4)

> *I never really explored (ICT Company) at the time, but some of my friends did and why I didn't look at it, I don't know why, because the stock would have split a couple of times and we wouldn't even be having this conversation. From a regret standpoint, I probably should have looked at it. I didn't know any better.* (BCW5)

> *I've seen a lot of people that are my peers, who have been huge successes and I feel that keeps me going, but at the same time I feel that I should have succeeded earlier. I guess that's one thing that does concern me is that I've just been given all this opportunity and I still haven't really converted. You have to obviously define what success means to you and what this could look like. But my point is I feel that for some reason, it's alluded me and I go on working and saying, "When's it my turn?"* (BCM4)

These missed opportunities, and reflections of “maybe I should have…” were consistent with another theme that, although not described as a regret, is appropriately situated as one for the purposes of this research, namely the lack of a career plan.

Careers of ICT executives were not planned and the serendipitous nature of early career entry decisions continued in later year career choices and outcomes, particularly for women.

Several executives described how their career had been a series of serendipitous events and the choices they made were not very intentional. They described not having a career plan as neither a regret nor a barrier, but instead offered it as more of an observation or almost an admission that is consistent with their descriptions of career luck (see Enablers, Individual). This theme was strongest among women, which may relate to their expressed lack of self-confidence (see Barriers, Individual). Men also described how their career might have included more strategic choice.

> *I really hadn't chosen what I wanted to do. Things chose me.* (KWW1)
>
> *I really haven't planned my life. I've really just been rolling with it.* (KWW7)
>
> *I'd love to be able to say it's because I'm a brilliant strategist and I've worked to a certain position but it's, unfortunately, not true.* (NSM5)

Despite a lack of planning, executives expressed feelings of career satisfaction. They also seemed to be grateful for the opportunity to reflect on their careers.

ICT executives were grateful for the opportunity to reflect on their careers and seemed to lament not having done so previously.

One final theme emerged and is an appropriate reference in conclusion since it was typically offered as interviews were winding down, namely, that participants expressed appreciation for the opportunity to reflect on their careers. This is an important theme since it strengthens comments made about how participants had not considered their careers holistically and they described a lack of career planning (see Career Regrets). While acknowledging they had not planned their careers, they also seemed to appreciate the opportunity to reflect on them. More

so than a thank you at the end of an interview, they expressed what seemed like a genuine interest in thinking about their careers as though they might have done things differently had they thought about their careers more regularly in the past.

> *I don't really think about my career. I never sat down ever and said, 'Okay, this is my career or what I want my career to be…I've never had that plan, right? (NSW4)*

> *It's a good opportunity for me to think back on those old days. We have to stop and take time to recognize what we have done…we don't normally get to talk about these things and this is wonderful. (BCW4)*

> *I haven't actually, you know, done anything like this before where I've kind of sat and reflected and kind of gone through the timeline of my career and described it as you're playing it back. It has been pretty interesting. I've enjoyed it, I've got to say. (BCM7)*

Some of the evidence for this final theme comes from the intonation of the interviews, the pauses before answers, and the moments where it seemed participants "never thought of it that way" but wished they had. They seemed to wonder about their own lack of wonder in relation to their careers.

5.4.3 Mature-Career Stage Summary

Following is a summary of mature stage themes that emerged from the data:

1. The strongest source of career pride among participants was their contribution to the development of teams and individuals.
2. Start-ups and turnarounds were a source of pride for women and men.
3. Scope and scale of responsibility was a source of career pride. How others, including family members, perceived their status was important to participants.
4. Having "no regrets" about their careers was an initial view described by some men and women, particularly men. Upon reflection, regrets emerged.
5. Maintaining a healthy work life balance was a source of pride for men more so than for women who reflected on the lack of balance as a career regret.
6. Both men and women regretted lost financial opportunities including not securing jobs that paid more, as well as not having equity in companies where they worked.

7. Careers of ICT executives were not planned and the serendipitous nature of early career entry decisions continued in later year career choices and outcomes, particularly for women.
8. ICT executives were grateful for the opportunity to reflect on their careers and seemed to lament not having done so previously.

5.5 Conclusion

Thirty-eight themes emerged from the data across the three career stages of early-career, mid-career, and mature-career. Five themes emerged relative to early-career and only one of these was unique to women; namely, a lack of support from the education system, which was a barrier to career advancement. Other early career influences included: educational attainment, especially coop programs, upbringing experiences related to family work ethic, and technology exposure. Serendipity was also described as an enabler of career advancement in both the early-career and mid-career stages.

Twenty-five mid-career influences emerged as themes across four categories of individual, family, organization and society. Both genders described more influences as enablers (n=15) than barriers (n=12) although women described more barriers (n=12) than did men (n=3). Barriers for both men and women were extrinsic, relating mostly to organizations, whereas enablers were intrinsic, relating mostly to individual traits or skills as will be discussed in the following chapter. There were no notable differences in career advancement barriers or enablers by region.

Eight mature-career stage themes emerged including pride related to development of others, successful start-ups and turnarounds, as well as scope and scale of jobs that led to perceived career status. Some participants had no career regrets, especially men, who described greater career and family balance than did women, who sometimes regretted a lack of balance. ICT executive participants were generally content with their careers, including the good luck they had experienced. They were grateful for the opportunity to reflect on their careers and seemed to lament not having done so previously.

CHAPTER 6 DISCUSSION AND CONCLUSION

6.1 Introduction

The overriding purpose of the study is to shed light on the career experiences of Canadian ICT leaders in order to inform the ongoing discussion about the under representation of women at senior levels in the Canadian ICT sector and the ongoing pursuit of initiatives that might increase ICT sector gender parity. Multiple case study analysis involving 48 interviews was undertaken in three Canadian regions. A variety of patterns emerged from the career experience accounts and are discussed in this chapter. It is organized according to the research questions and concludes with a discussion on research contributions.

6.1.1 Research Question 1

The first question investigated in this study was “How do ICT executive men and women across Canada describe their careers?” Evidence of traditional and more contemporary notions of career were present in the results. Both men and women were consistent in their approach by describing careers in a linear fashion where progression is up a ladder of increasing responsibility and advancement implies greater job scope. A balance of objective and subjective career success criteria were cited. Both men and women described objective career success in terms of scope and scale of the job as well their level of compensation. Subjective success criteria included the positive impact that the executive participants had in advancing the careers of others, and how they had developed people. The impact on developing younger people, including the participants’ own children were especially evident as measures of career success. The balance of objective and subjective career measures is consistent with contemporary literature, notably Dries (2011) who suggests adopting a dual viewpoint of career success.

Careers were described in a chronological sequence of mostly job related events, typically beginning with references to education, which was evidently considered to be the beginning of a career in most cases. The various accounts of careers offered by both men and women imply a strong identification with the role of student and worker in Super’s Life-Career Rainbow model (Super, 1990).

Women related more to roles of parent and homemaker, while other roles including Super's concept of leisurite along with that of citizen, were evident across both genders. Careers were described as "hard work but worth it," and ICT executives in Canada demonstrated a high level of career satisfaction despite the many sacrifices they acknowledged including extensive travel and trading family time for work time especially early in their careers.

Careers overall, and many career transitions in specific, seemed to involve more luck than thoughtful planning. Progression seemed to be based on a series of small career experiments beginning with decisions to enter the workplace and pursue a career in the ICT sector. There was strong evidence of a shift from the traditional career model towards the boundaryless career circa 1999 for the study participants. In and around this timeframe, consistent with the timing of Sullivan's (1999) boundaryless career research, several career stories made reference to this transition, especially how responsibility for career management shifted away from the organization towards the individual. With employment typically at upwards of five different organizations in jobs where there was often no training, evidence of the boundaryless career was substantial. Even participants who worked in the same organization since entering the workforce considered themselves to have crossed many boundaries, "like I was working in many firms." During the career horizon of participants, evidence was strongly in support of Sullivan's (1999) representation of the boundaryless career. This transition from the traditional linear career included a decline in employment relationships based on job security and loyalty, employment in multiple firms, being in pursuit of meaningful work, and developing transferable skills where advancement involves learning on-the-job. In addition to participants describing multiple jobs in different organizations where they "figured things out" without training, themes which emerged from the data provided evidence of the boundaryless career including relationships being more individually based (see Enablers, Individual), lack of fit in mid-career (see Barriers, Organization), and career pride from developing the careers of others (see Career Pride).

Careers were described as ongoing, with more participants sharing intentions for their career to wind down than those who expressed that “the best is yet to come.” Given the median age of participants at 51 years there were many references to retirement during interviews but these were matched with references to ongoing careers with an increased focus on developing future leaders. Men and women described intentions to increase “giving back” by mentoring (see Career Pride). Canadian ICT executives seemed to be turning more to their role of citizen in their later career or what Super describes as the declining stage. This may represent an opportunity for individuals, organizations, and indeed society to develop future leaders in the ICT sector, including potentially advancing more women in senior positions. ICT executives evidently see their later career years as a calling to develop others. This is consistent with the transition towards both a boundaryless career and increased subjective career success measures as observed in the study. Programs that encourage mentorship and development of future leaders may be able to harness the intention of Canadian ICT executives to continue developing the careers of others.

6.1.2 Research Question 2

The second research question asked, “How do ICT executive men and women across Canada describe barriers and enablers to their career advancement?” This research suggests that barriers and enablers were mostly encountered during mid-career and they aligned with the establishment and maintenance stages of Super’s Life-Career Rainbow. Some of these influences were encountered earlier as educational experiences but the bulk were related to mid-career transitions, including promotions or job changes of which the mean was eight for study participants including first jobs. Both men and women had a clear understanding of their career advancement barriers and enablers, requiring minimal definition or direction in conceptualizing them during interviews, which suggests a high level of self-awareness. Some men (n=7/24) and women (n=7/24) were initially unable or unwilling to offer descriptions of barriers. This suggests they had encountered few or no barriers or that they were unwilling to disclose them

during the interview. This may be a result of the participants being conditioned to a higher level of self-confidence, overcoming what other participants and literature suggests is a barrier for some women.

Considering all the career influences identified and the potential for any one influence to be an enabler or a barrier, the study accounted for more enablers (n=30/50) than barriers (n=15/50). This relatively high volume of enablers, together with more descriptions of career pride than regrets, suggests a high level of career satisfaction among participants. However, there was evidence of a glass ceiling for women since they described more barriers (n=12) than did men (n=3) including many accounts of being the only woman in group settings such as on teams, in meetings, or at conferences. Moreover, the career experiences of women provided evidence consistent with cited research related to the glass ceiling phenomenon including the chilly climate and lack of fit, the good old boys club, inequitable compensation, and the burden of family care responsibilities. Men were not immune to barriers that were similarly related to fit, as well as family pressure to reduce travel that they perceived had limited their career opportunities. Barriers for both men and women were typically extrinsic, being associated with organizations and family. In comparison, enablers were typically intrinsic related to individual traits, skills, or relationships, including with mentors.

This study suggests that the boundaryless career model, including increased career management undertaken by the individual and less by the organization, has applied to ICT executives in the mid-career stage (see Discussion, Research Question 1). Consistent with this result, and given that career advancement enablers seem to be more intrinsic, men and women executives seeking to advance might focus on increased self-awareness so they can understand and potentially take steps to increase the influence of career advancement enablers. To reduce barriers, initiatives may be more appropriate at the organizational level, and may hold more promise to achieve increased representation of women as will be explored in consideration to research question four.

Most participants from both genders acknowledged the study interview process and the experience of reflecting on their career as a useful activity and in many ways “a therapeutic exercise.” References to having “never really thought about my career” are evidence of the serendipitous nature of the careers described by participants and how some ICT executives had not planned their careers despite many of them having participated in structured leadership development programs, and achieving a high level of career success. Supers’ (1980) Life-Career Rainbow model is consistent with how ICT executives described their careers, “including notions of life stages, life space, and lifestyle” (p. 296). The model helps students and adults to understand these important career management concepts and,

> As a counselling aid, with older adolescents and with adults, helps them to analyze their own careers to date; and to project them into the future, both as they have been developing and as they might, with planning, develop. (Super, 1980, p. 296)

The high levels of success and career satisfaction achieved by ICT executives was influenced, in part, by good luck, largely in the early-career and in the early mid-career stages when they were sometimes identified as high management potential and groomed for leadership positions. Some participants described how, “it’s different now,” and how today, career management is driven by the individual. It would seem that applying Super’s Life-Career Rainbow could help today’s future leaders to navigate in the increasingly boundaryless career world. The expression of gratitude from participants for inviting them to describe their careers, and to reflect on barriers and enablers, suggests that they “wish they had thought of it that way,” and that there is potential to use tools such as Super’s Life-Career Rainbow to facilitate increased career planning and management. Indeed, the suggestion that such activities should be considered as career “identity work” (Bowles, 2012, p. 189) is consistent with the study results. The reflective interviews were deeply personal and appreciated by participants. The implication of this conclusion can be relevant to individuals, families, and organizations in as much as increased career planning and management should involve all three groups albeit in a boundaryless world it would be centred on the individual. Tools,

such as Super's Life-Career Rainbow, when combined with the model of barriers and enablers to career advancement described in answer to the third study question, may lead to even higher levels of career satisfaction (Lee, 2002) and potentially support initiatives to advance the careers of future ICT executives, including women, as will be discussed in answer to research question four.

6.1.3 Research Question 3

The third research question sought to more deeply explore, "What are the ICT executive career experience patterns across gender and across regions of Canada (barriers, enablers, and outcomes)?" A model summarizing the barriers and enablers according to gender was developed identifying twenty-five career advancement influences in four categories of individual, family, organization, and society. Patterns were evident across gender at the Canadian level as illustrated in the model, thus accounting for three cases: Canadian ICT executives (n=48), Canadian women ICT executives (n=24), and Canadian men ICT executives (n=24). However, patterns at the regional level were less evident despite selective coding efforts used to discover differences among these other nine cases. There were a few cases where regional themes were stronger or weaker but no regions where there was outright absence of the barriers and enablers in the proposed model. These results suggest that careers of ICT executives across Canada are similar at least within gender. Given the significant volume of travel described and the mobility patterns among participants including that most had worked and lived in other regions of Canada (n=31/48), it is not surprising that regional differences would be minimal. Education patterns among participants were also similar in that most had post-secondary education (45/48), with the exception of three women, and the number of university degrees per person was 1.6 for both men and women, ranging from a low of 1.3 for men in Nova Scotia to a high of 1.9 for men in British Columbia. These similarities in the demographic composition of study participants may account for similar career experiences; so the research considered other factors to explore differences.

The Individual Differences Theory of Gender and IT focuses on differences within gender and has been used to study organizational and societal factors that influence the under representation of women in ICT (Trauth et al., 2004). Notwithstanding the use of this lens to consider the study results, women in each region offered consistent accounts of their experiences that fit the model of barriers and enablers as developed in the present study. Interpretation of the interview data established more than one participant of a particular gender, in more than one region experienced the career influence, which suggests more similarities and fewer differences were offered in career accounts. While each individual story was unique with underlying factors potentially influencing the lived career experiences and their expression by participants, these differences did not emerge strongly. The absence of differences may be evidence of a homogeneous Canadian ICT culture, possibly resulting from a few large ICT players dominating the sector early in its development when most of the study participants were in the prime of their careers. Although none of the top 25 ICT multi-nationals in 2015 had Canadian head offices in the study regions, these organizations would employ large numbers of Canadian ICT workers, including the participants at some time in their careers and this could account for a homogeneous ICT culture in Canada historically, if not to the present day.

The Individual Differences Theory of Gender and IT encourages consideration of family background and related influencing factors (Trauth et al., 2004) which might account for how women navigate ICT careers. There were regional differences in the participants' place of birth suggesting greater diversity in British Columbia where the highest number of participants were born outside of Canada (n=5/16) compared to Ontario (n=3/16) and Nova Scotia (n=2/16). In addition, British Columbia women participants self-reported the highest instance of single or divorced marital status at (n=5/8) compared to (n=1/8) in each of the other regions. Higher rates of relocation or marital instability might result in a stronger family influence in career decisions and outcomes. Again, despite selective coding and additional analysis, interpretation of results suggests no regional differences, with women in all regions describing family related barriers

and enablers including care responsibilities, and travel, as well as family support and encouragement. One final consideration of regional difference relates to the theme of luck as a career influence that was notably weakest in the Waterloo Ontario region (n=6/16) compared to Nova Scotia (n=9/16) and BC (n=9/16). This difference might be attributed to the Ontario participants having the highest count of technical university degrees among participants at (n=19/16), with more than one degree per person, compared to British Columbia at (n=15/16) and Nova Scotia at (n=13/16), since ICT technical workers are arguably more influenced by research and less inclined to attribute outcomes to luck (Von Glinow, 1988). Although possible, this connection is not supported strongly by study data since some of the references to luck were indirect. Overall, the data suggests that patterns in the career experiences of ICT executives are at the national level and that regional differences are minimal.

Canadian women ICT executives experienced barriers consistent with the literature including, a lack of confidence, difficulty balancing work and family, being in a minority, the old boys network, a lack of fit, inequitable compensation, as well as stereotypes and biases. Canadian ICT executive men described balancing work and family, as well as family pressure to minimize business travel as barriers. Men and women identified restructuring, leadership development programs, stretch assignments, mentorship, and family support as enablers. The interview protocol specifically asked about the influence of organizational policy on careers, and a clear pattern of policy malaise was evident. Executives described how policy had no influence on their careers. None of the executives described the influence of policy or related programs intentionally targeted at advancing the careers of under-represented groups such as women. There were no references to the impact of employment equity initiatives or affirmative action despite the presence of such policies during the mid-career stage of most executive study participants.

The significance of career experience patterns identified in the study, including the model of barriers and enablers and the lack of regional differences could inform how initiatives aimed at increasing the representation of women in ICT might be framed. Policy makers contemplating investments to facilitate

increased participation of women in the ICT workforce might focus at the national level rather than considering more local approaches. National patterns consistent with the literature and the lack of regional patterns would suggest a higher return on investment for any potential Canadian initiatives as will be explored in relations to research question four.

6.1.4 Research Question 4

The final research question searched for strategies that might lead to increased gender parity by exploring answers to, “What initiatives might increase the representation of women in the Canadian ICT sector, particularly at senior levels?” An obvious answer to this question might simply be to minimize the barriers and maximize the enablers described by participants. The larger number of extrinsic barriers, mostly at the organizational level might be addressed first possibly using combinations of the many strategies described in the literature. While this approach may be useful, consideration for solutions not described by the participants may also hold promise. This section will first discuss strategies for individual women seeking to advance in the ICT sector followed by what organizations, including governments, might do to advance the careers of women.

One might conclude that for a woman in the ICT sector to succeed and ascend to executive status she need only follow the path of the 24 successful women as described in this study. The model of barriers and enablers to career advancement drawn from the study data may be useful for career management purposes and together with long standing tools, such as Super’s Life-Career Rainbow, they provide a framework for understanding the “locks and keys” (Vinnicombe & Singh, 2011) to ICT career advancement, at least from a Canadian perspective. In essence, the message to aspiring women might be something like, “Stay in school, get some good mentoring, participate in a management development program to build your confidence, be a bit more aggressive, accept the fact that you might be thought of as a bitch, negotiate a good family care deal with your spouse, work hard, fit in, build a network of good relationships, pursue stretch assignments, develop your track record, and you’ll advance!” While these

strategies might be appropriate for an individual and their application might increase the representation of women, the associated logic suffers from at least three flaws. The first flaw is that it overlooks the impact of organizations and society more broadly. The second assumes women need to change. The third is that, to date these strategies, which have been discussed for many years, have not worked sufficiently to change the situation – the representation of women in ICT has not increased.

The data in the study suggest that organizations should consider how women are excluded from social networks and how organizational culture can contribute to women feeling they don't fit in an ICT workplace. Organizations should consider paying more attention to downsizing exercises where women seem to have been impacted more than men and in restructuring initiatives where both women and men described having realized advancement opportunities. These situations may represent moments where the advancement of women may be accelerated. Moreover, and consistent with literature, leadership development programs that help to make women more visible and related stretch assignments can lead to their advancement as described by the participants. Similarly, mentorship programs should be sustained as they seem to be effective supports for women in their careers. Moreover, mentorship is on the minds of executives late in their careers and there seem to be an opportunity to leverage their interest in helping others as discussed in relation to the second research question. The evidence suggests these types of initiatives have made a difference in the careers of women.

The career experiences described by the study participants are consistent with long standing literature. The patterns of Canadian ICT executive career experiences are not substantially different from the experiences studied in other contexts. The more relevant pattern in this study to inform initiatives for organizations may lie more in what was not described by participants as being impactful for their careers rather than what was described as impactful. What participants did not experience may be more valuable in answer to the fourth research question, namely the lack of policy influence. Affirmative action programs

including workforce targets for under-represented groups have been linked to increased gender parity since the mid-1970s in the US (Kurtulus, 2012) and more recently around the world (Sojo et al., 2016), yet these were not identified by participants as having influenced their careers. Of late, governments are increasingly encouraging organizations to address under-representation through policy. Much of the literature focuses on how individuals can influence their careers including, for example, how women might advance by building their confidence. Indeed, the study data from ICT executive women suggests overcoming this barrier might be an effective career advancement strategy. However, applying individual strategies like this, evident from long standing literature, don't seem to have resulted in improved representation, despite organizational support for them from leadership development programs. The lack of career advancement influence attributed to policy by study participants, combined with the lack of progress advancing more women in ICT over their lifetimes, suggests at least paying more attention to policy as an initiative that might lead to real change.

6.2 Strengths and Limitations of the Research

The approach to the research and some of the methodological choices have limitations that are important to note in addition to the study strengths. Coverage of a broad range of themes, the depth of analysis from rich interview data, as well as robust analytical techniques including validation steps are strengths of the study. Qualitative studies are typically not intended to be generalizable given their often-small sample sizes. Instead, they focus on rich data analysis (Ely, 1995). Gaining access to men and women executive participants in three regions of Canada, and collecting their career stories through semi-structured interviews provided a unique source of rich qualitative data. Applying an inductive approach to the data analysis, and using powerful qualitative data analysis software to explore their stories and identify career patterns, provided a depth of analysis that was a strength of the study. The study included a sufficient number of cases and participants in each of the three regions, and nationally, so as to be trustworthy. Peer debriefing, as a validation step, also helped to increase trustworthiness of the

research. The study provides new knowledge by being the first to qualitatively explore the career experiences of Canadian ICT executive men and women. This was also one of a few, but growing number of, studies that considered the emerging Individual Differences of Gender in IT theory lens, and seemingly is the first to do so from a Canadian perspective.

Notwithstanding its strengths and contribution as new knowledge, the study has several weaknesses including the potential for bias on the part of the researcher and the participants. This study is influenced by the researcher's personal career experiences and as such is a reflection of social, cultural, gender, and other factors that make up his reality. The research is interpretive, and the life lens of the author cannot be overlooked, despite efforts to be objective throughout the study. "Qualitative researchers need to accept this interpretation and be open about their writings" (Stake, 2006, p. 215). The data analysis followed a rigorous approach with validation strategies to maintain the trustworthiness of the study which is mostly written in the third person, in part to underline the intent to be, and appear to be, trustworthy. Notwithstanding this consistent effort to observe, analyze, and report from a distance, the author is not separate from the research.

I have been working in the IT sector for thirty-five years and have held positions comparable to those of the study participants, sometimes in the same organizations. If the study had been done by another researcher who applied the same recruitment criteria, it is likely that I would have been a participant. I have worked in all of the case regions studied and have hired many men and women in the IT sector across Canada including the case regions. I have worked indirectly with some of the participants but have not had direct reporting relationships with them. The research ethics protocol and study consent materials acknowledged this reality. More importantly, I have done my best to maintain my objectivity throughout the study.

My research journal includes notes-to-self that cautioned my analysis in a few situations but overall, I did not encounter data that might have been distorted based on my knowledge of, or experience in, the ICT sector. I challenged myself to be objective. I believe that my personal experiences influenced the study

minimally. When participants spoke about experiences that I might have encountered personally, I would resist, “been there, done that,” references or thoughts and instead would probe with, “tell me more.” In a few situations, my personal experience urged me to probe more deeply on a topic that I otherwise might not have. In particular, interview discussion that related to business travel and organizational policy were probed more deeply on account of my personal experiences.

My gender may have influenced the study. As a male ICT executive with a long history in roles where I hired and promoted large numbers of ICT men and women, I was arguably a contributor to the under representation “problem.” I reflected on this and repeatedly asked myself if my approach to the study or my analysis was influenced by my gender. My consistent answer was that my gender might be an influence but not in ways that I could identify. My perspective in this study was that of a researcher trying to see patterns in order to understand a problem and explore solutions. By being open about my personal experiences in relation to the study I acknowledge their potential influence and thus I maintained my objectivity, which provides a solid foundation on which we can now return to describing potential bias among study participants.

The personal nature of the interview questions could have led to bias on the part of participants. They could have reflected selectively and shared experiences based on preconceived ideas about the study and its focus. Moreover, ego could have influenced their answers especially since the interviewer was previously a member of the ICT community and was known by some participants to have been an executive, in some ways like them. Gender may have also influenced how participants described their experiences since the researcher was a male exploring what might be considered to be women’s issues, and there is evidence to suggest that women provide more honest responses when interviewed by other women (Hutchinson & Wegge, 1991). The participants could have described events in their careers differently based on some post-rationalization or just because they occurred many years ago (Vinnicombe & Singh, 2011). Further, the semi-structured interview approach allowed for a balance of structure and open

conversation, however, probes introduced by the interviewer may have been applied inconsistently and may have biased the discussion.

A further limitation of the study may result from some confusion among a few of the Nova Scotia women participants during the first phase member checking process. This related to a process outside the research where the project sponsor, Digital Nova Scotia, was reusing the interview data to construct career profiles for external publication. A separate process had been established to secure approval from participants for publication of these profiles, which was acknowledged in the Consent Form. Although there were no ethical issues associated with this secondary use of the data, it was a source of some confusion during some member checking interviews. A more clear separation of these two processes could have been more effective.

Notwithstanding these shortcomings, the approach to the research including methodological choices as described in the Chapter 3 appropriately support the dissertation. Perhaps the most valuable contribution of the research is yet to be discovered in that future studies undertaken by the researcher will be enriched by the research approach and methodological lessons learned in the present study.

6.3 Summary of the Research

This multi-case study explored the careers of 48 Canadian ICT executives from three regions of Canada to understand how patterns in their career experiences might inform initiatives to increase the representation of women in the Canadian ICT sector, particularly at senior levels. Rich interview data were gathered and an iterative coding approach identified 35 themes across four categories consistent with Schein's career schema (1971) and the Individual Differences Theory of Gender and IT from Trauth et al. (2004). A career stage framework consistent with Super's Life-Career Rainbow was used to sequence the career stories, including the mid-career stage that situated a model of career influences and the majority of study themes. An integrative model of barriers and enablers to career advancement from Canadian executives was developed that

was found to be consistent with extant literature about barriers to career advancement for women from other non-Canadian studies. No qualitative studies exploring the careers of Canadian ICT executives were found. Only a few regional differences emerged among the barriers and enablers across gender. Thus, the career experiences of Canadian executives are somewhat consistent and, in the context of careers, the Canadian ICT sector may be considered reasonably homogeneous at least for the cohort born in the early to mid-1960s.

What follows is a summary of the discussion found in Chapter 6, and an answer to the overriding research question "How might patterns in the career experiences of ICT executive men and women across Canada inform initiatives to increase the representation of women in the Canadian ICT sector, particularly at senior levels?" Individuals, and organizations including government policy makers should consider the following four points in exploring how to advance more women to senior levels in the Canadian ICT sector:

1. Canadian ICT executives consider the development of others as a strong source of career pride. So, organizations, including governments, should support initiatives where Canadian ICT executives act as coaches, mentors, and role models growing the sector's future leaders.
2. Canadian ICT executives see value in reflecting on their careers and do so in ways that are consistent with frameworks such as Super's Life-Career Rainbow. They see leadership development programs as a positive impact on their career advancement. So, individuals and organizations, including governments, should consider the use of such tools in leadership development programs including the model of barriers and enablers developed in this study.
3. The career experiences of Canadian ICT executives are not substantially different across geographic regions of Canada. So initiatives coordinated at the national level may be more efficient and should be preferred over those that are uniquely regional in focus.
4. Despite consistent and growing talk about advancing the careers of more women in the Canadian ICT sector, gender parity has not increased. Organizations should consider new more bold initiatives. The career

experiences of Canadian ICT executives feature the absence of one such initiative, namely workforce measurement and setting gender representation targets that should be considered by organizations as a vehicle to accelerate the pace of increased representation of women.

These four points constitute practical implications of the research. They are tangible insights that organizations and individuals might apply in considering actions they may take to increase the representation of women in the ICT sector in Canada.

6.4 Conclusion

The under representation of woman in the ICT workforce, including at senior levels, has persisted for many years despite growing awareness of the business benefits associated with diversity. Research has demonstrated how women face barriers to career advancement and suggested how organizations might take steps to increase gender parity. This research has shed light on the phenomenon from the perspective of Canadian ICT executives by exploring their career stories.

This research informs and supports initiatives that individuals and organizations might undertake to advance more women in the Canadian ICT sector. It describes what Canadian executives considered to be the barriers and enablers to their career success, which to this point is an untapped source of research knowledge. The research identifies patterns that should provide insight to potential future government or industry programs aimed at increasing the representation of women in ICT. It also may inform programs that businesses and individuals might undertake to help women at senior levels get further ahead.

In conclusion, Canadian ICT executives are proud of their careers and seem to be seeking opportunities to develop future leaders, possibly by being mentors as they approach the later stages of what Super describes as a life-career rainbow. They are well positioned to help others to manage their own careers since they themselves have successfully transitioned to the new boundaryless career model. Harnessing this potential is something policy makers might consider in a national leadership development program, possibly applying Super's Life-Career Rainbow

and Sullivan's notion of a boundaryless career that seemed to fit the careers of Canadian ICT executives. Insights about barriers and enablers from this research might inform the design of such a program. An additional program might also be considered that encourages or requires organizations to set targets and report progress in the representation of women, as has been done in other national jurisdictions with some success. Had such a program been in place earlier in Canada's ICT sector, the representation of women might be greater than it is today. The application of research findings evident in extant literature has not produced improved representation results thus far. Maybe it is time to give new policy a try.

REFERENCES

Aaltio, I., & Huang, J. (2007). Women managers' careers in information technology in China: High flyers with emotional costs? *Journal of Organizational Change Management*, *20*(2), 227–244.

Adams, R., & Funk, P. (2012). Beyond the glass ceiling: Does gender matter? *Management Science*, *58*(2), 219–235.

Adya, M., & Cotton, J. (2012). Exploring the role of mentoring in the IS profession: A cross-national comparison. In *Proceedings of the 50th Annual Conference on Computers and People Research* (pp. 143–146). New York, NY: ACM Press.

Allen, T., & Russell, J. (1999). Parental leave of absence: Some not so family-friendly implications. *Journal of Applied Social Psychology*, *29*(1), 166–191.

Anne, B. (1998). *Workplace diversity: A fifty-year perspective*. (Unpublished doctoral dissertation). Pepperdine University, Malibu, CA.

Applebaum, S., Ayre, H., & Shapiro, D. (2002). Career management in information technology: A case study. *Careeer Development International*, *7*(3), 142–158.

Arnold, J. (2001). Careers and career management. In N. Anderson, D. S. Ones, H. K. Sinangil, & C. Viswesvaran (Eds.), *Handbook of industrial work and organizational psychology* (pp. 115–131). (Vol. 2). Thousand Oaks, CA: Sage Publications.

Arthur, M., Hall, D., & Lawrence, B. (1989). Generating new directions in career theory: The case for a transdisciplinary approach. In M. Arthur, D. Hall, & B. Lawrence (Eds.), *Handbook of career theory* (pp. 7–25). Cambridge, MA: Cambridge University Press.

Arthur, M., Khapova, S., & Wilderom, C. (2005). Career success in a boundaryless career world. *Journal of Organizational Behavior*, *26*(2), 177–202.

Barak, M. (1999). Beyond affirmative action: Toward a model of diversity and organizational inclusion. *Administration in Social Work*, *23*(3), 47–68.

Barsh, J., & Yee, L. (2012). *Unlocking the full potential of women at work*. New York, NY: McKinsey & Company.

Baxter, J., & Wright, E. O. (2000). The glass ceiling hyphothesis: A comparative study of the United States, Sweden, and Australia. *Gender & Society*, *14*(2), 275–294.

BCBusiness. (2016). Top 100 companies in B.C. Retrieved from http://www.bcbusiness.ca/top100_2016.php

Bechet, T. (2002). *Strategic staffing: A practical toolkit for workforce planning*. New York, NY: AMACOM.

Beck, J. M., Foot, R., James-Abra, E., & McIsaac, J. (2015). Nova Scotia. Retrieved from http://www.thecanadianencyclopedia.ca/en/article/nova-scotia/

Becker, H. S., & Strauss, A. (1956). Careers, personality, and adult socialization. *American Journal of Sociology*, *62*(3), 253–263.

Beeson, J., & Valerio, A. (2012). The executive leadership imperative: A new perspective on how companies and executives can accelerate the development of women leaders. *Business Horizons*, *55*(5), 417–425.

Beninger, A., & Carter, N. (2013). *The great debate: Flexibility vs . face time - Busting the myths behind flexible work arrangements*. New York, NY: Catalyst.

Bowles, H. (2012). Claiming authority: How women explain their ascent to top business leadership positions. *Research in Organizational Behavior*, *32*, 189–212.

Branham Group. (2016a). Branham300: Top 250 Canadian ICT companies. Retrieved from https://www.branham300.com/index.php?year=2016&listing=1

Branham Group. (2016b). Branham300: Top 25 Canadian up and coming ICT companies. Retrieved from https://www.branham300.com/index.php?year=2016&listing=4

Branham Group. (2016c). Branham300: Top 25 ICT multinational companies operating in Canada. Retrieved from https://www.branham300.com/index.php?year=2016&listing=3

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101.

Bruckmuller, S., Ryan, M., & Haslam, S. A. (2014). Beyond the glass ceiling: The glass cliff and its lessons for organizational policy. *Social Issues and Policy Review*, *8*(1), 202–232.

Cabrera, S., & Thomas-Hunt, M. (2007). “Street cred” and the executive woman: The effects of gender differences in social networks on career advancement. In S. J. Corell (Ed.), *Social psychology of gender: Advances in group processes* (Vol. 24, pp. 123–147). Bingley, UK: Emerald Group Publishing Ltd.

Cacioppe, R. (1998). An integrated model and approach for the design of effective leadership development programs. *Leadership & Organization Development Journal*, *19*(1), 44.

Caleo, S., & Heilman, M. (2013). Gender stereotypes and their implications for women’s career progress. In S. Vinnicombe, R. J. Burke, S. Blake-Beard, & L. Moore, Lynda (Eds.), *Handbook of research on promoting women’s careers* (pp. 143–161). Cheltenham, UK: Edward Elgar Publishing.

Canadian Trade Commissioner Service. (2016a). Halifax: Canada’s ocean city. Retrieved from http://www.international.gc.ca/investors-investisseurs/cities-villes/halifax.aspx?lang=eng

Canadian Trade Commissioner Service. (2016b). Nova Scotia: Canada’s gateway to the world. Retrieved from http://www.international.gc.ca/investors-investisseurs/cities-villes/atlantic-atlantique/nova_scotia-nouvelle_ecosse.aspx?lang=eng

Cappelli, P., & Hamori, M. (2005). The new road to the top. In *Harvard Business Review on Women in Business* (pp. 29–50). Boston, MA: Harvard Business School Publication Corp.

Carlson, J. (2010). Avoiding traps in member checking. *The Qualitative Report*, *15*(5), 1102–1113.

Carter, N., & Silva, C. (2010). *Pipeline’s broken promise*. New York, NY: Catalyst.

Carter, N., & Silva, C. (2011). *The myth of the ideal worker: Does doing all the right things really get women ahead?* New York, NY: Catalyst.

Castilla, E. (2015). Accounting for the gap: A firm study manipulating organizational accountability and transparency in pay decisions. *Organization Science*, *26*(2), 311–333.

Catalyst. (2004). *The bottom line: Connecting corporate performance and gender diversity*. New York, NY: Catalyst. Retrieved from http://www.catalyst.org/publication/82/the-bottom-line-%0Aconnecting-corporate-performance-and-gender-diversity

Catalyst. (2013). *2012 Catalyst census: Financial Post 500 women senior officers and top earners*. New York, NY: Catalyst. Retrieved from http://www.catalyst.org/knowledge/2012-catalyst-census-financial-post-500-women-senior-officers-and-top-earners-0

Catalyst. (2014a). Pyramid: Canadian women in business. Retrieved from http://www.catalyst.org/knowledge/canadian-women-business-0

Catalyst. (2014b). *Women in U.S. information*. New York, NY: Catalyst. Retrieved from http://www.catalyst.org/knowledge/women-us-information

Catalyst. (2017). *Women CEOs of the S&P 500*. New York, NY: Catalyst. Retrieved from www.catalyst.org/knowledge/women-ceos-sp-500

Cattaneo, R. J., Reavley, M., & Templer, A. (1994). Women in management as a strategic HR initiative. *Women in Management Review*, *9*(2), 23–28.

Chatman, J. (1989). Improving interactional organizational research: A model of person-organization fit. *Academy of Management Review*, *14*(3), 333–349.

Cheriton School of Computer Science. (2016). Women in computer science. Retrieved from https://cs.uwaterloo.ca/wics

Chinn, D., & VanDeGrift, T. (2008). Gender and diversity in hiring software professionals: What do students say? In *Proceedings of the Fourth International Workshop on Computing Education Research* (pp. 39–50). New York, NY: ACM Press.

Citizenship and Immigratation Canada. (2012). *Canada's economy*. *Discover Canada: The rights and responsibilities of citizenship*. Ottawa, ON: Government of Canada. Retrieved from http://www.cic.gc.ca/english/resources/publications/discover/section-12.asp

Clayton, K., Hellens, L., & Nielsen, S. (2009). Gender stereotypes prevail in ICT: A research review. In *Proceedings of the Special Interest Group on Management Information System's 47th Annual Conference on Computer Personnel Research* (pp. 153–158). New York, NY: ACM Press.

Cohen, L., Broschak, J., & Haveman, H. (1998). And then there were more? The effect of organizational sex composition on hiring and promotion of Managers. *American Sociological Review*, *63*(5), 711.

Colclough, G., & Tolbert II, C. M. (1992). *Work in the fast lane: Flexibility, divisions of labour, and inequality in high-tech industries*. Albany, NY: State University of New York Press.

Collins, D. (2002). *The effectiveness of managerial leadership development programs: A meta-analysis of studies from 1982-2001*. Louisiana State University.

Conference Board of Canada. (2012). University attainment. Retrieved from http://www.conferenceboard.ca/hcp/provincial/education/university.aspx

Conference Board of Canada. (2016). Provincial education rankings. Retrieved from http://www.conferenceboard.ca/hcp/provincial/education.aspx

Cortada, J. (1996). *Information technology as business history*. Westport, CT: Greenwood Press.

Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Thousand Oaks, CA: Sage Publications.

Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory into Practice*, *39*(3), 124–131.

Cuddy, A., Fiske, S., & Glick, P. (2004). When professionals become mothers, warmth doesn't cut the ice. *Journal of Social Issues*, *60*(4), 701–718.

Cytrynbaum, S., & Crites, J. O. (1989). The utility of adult development theory in understanding career adjustment process. In M. Arthur, D. T. Hall, & B. Lawrence (Eds.), *Handbook of career theory* (pp. 66–88). Cambridge, MA: Cambridge University Press.

Dalhousie University. (2016a). Dalhousie faculty of computer science alumni. Retrieved from http://www.dal.ca/faculty/computerscience/alumni.html

Dalhousie University. (2016b). Dalhousie women in technology society (WITS). Retrieved from http://www.dal.ca/faculty/computerscience/about/student_life/dalhousie-women-in-technology-society--wits-.html

Dalton, G. W. (1989). Developmental views of careers in organizations. In M. Arthur, D. T. Hall, & B. Lawrence (Eds.), *Handbook of career theory* (pp. 89–109). Cambridge, MA: Cambridge University Press.

Dalton, G. W., Thompson, P. H., & Price, R. L. (1977). The four stages of professional careers: A new look at performance by professionals. *Organizational Dynamics*, *6*(1), 19–42.

Davey, K. M. (2008). Women's accounts of organizational politics as a gendering process. *Gender, Work & Organization*, *15*(6), 650–671.

Dawson, J., Kersley, R., & Stefano, N. (2014). *The Credit Suisse Gender 3000: Women in senior management*. Zurich, Switzerland: Credit Suisse Research Institute.

Dessler, G., & Chhinezer, N. (2016). *Human resources management in Canada* (13th ed.). Toronto, ON: Pearson.

Digital Nova Scotia. (2016). About DNS. Retrieved from http://www.digitalnovascotia.com/about/

Dinolfo, S., Silva, C., & Carter, N. (2012). *High potentials in the pipeline: Leaders pay it forward*. New York, NY: Catalyst. Retrieved from http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:High+Potentials+in+the+Pipeline+:+Leaders+Pay+it+Forward#1

Dries, N. (2011). The meaning of career success: Avoiding reification through a closer inspection of historical, cultural, and ideological contexts. *Career Development International*, *16*(4), 364–384.

Dries, N., & Pepermans, R. (2007). "Real" high-potential careers: An empirical study into the perspectives of organisations and high potentials. *Personnel Review*, *37*(1), 85–108.

Eagly, A., & Karau, S. (2002). Role congruity theory of prejudice toward female leaders. *Psychological Review*, *109*(3), 573–598.

Eby, L., Butts, M., Lockwood, A., & Simon, S. (2004). Proteges negative mentoring experiences: Construct development and nomological validation. *Personnel Psychology*, *57*, 411–447.

EduNova. (2016). Nova Scotia: Canada's education capital. Retrieved from http://studynovascotia.ca/nova-scotia-canadas-education-capital/

Ely, R. (1995). The power in demography: Women's social constructions of gender identity at work, *38*(3), 589–634.

Ely, R., Ibarra, H., & Kolb, D. (2011). Taking gender into account: Theory and design for women's leadership development programs. *Academy of Management Learning & …*, *10*(3), 474–493. http://doi.org/10.5465/amle.2010.0046

Enns, H., Ferratt, T., & Prasad, J. (2006). Beyond stereotypes of IT professionals: Implications for IT HR practices. *Communications of the ACM*, *49*(4), 105–110.

European Commission. (2012). Women's share of high tech knowledge-intensive services in Europe, 2008-2010. Retrieved from http://www.catalyst.org/knowledge/womens-share-high-tech-knowledge-intensive-services-europe-2008-2010

Ezzedeen, S. R., & Ritchey, K. G. (2009). Career advancement and family balance strategies of executive women. *Gender in Management: An International Journal*, *24*(6), 388–411.

Faulkner, R. R. (2003). *Music on demand: Composers and careers in the Hollywood film industry*. New Brunswick, NJ: Transaction.

Fels, A. (2004). Do women lack ambition? *Harvard Business Review*, *82*(4), 50–6, 58–60, 139.

Fitzsimmons, T., & Callan, V. (2016). Applying a capital perspective to explain continued gender inequality in the C-suite. *Leadership Quarterly*, *27*(3), 354–370.

Frankforter, S. (1996). The progression of women beyond the glass ceiling. *Journal of Social Behavior and Personality*, *11*(5), 121–132.

Fulmer, R., & Hanson, B. (2010). Developing leaders in high-tech firms: What's different and what works? *People & Strategy*, *33*(3), 22–27.

Fulmer, R., Stumpf, S., & Bleak, J. (2009). The strategic development of high potential leaders. *Strategy & Leadership*, *37*(3), 17–22.

Fusch, P., & Ness, L. (2015). Are we there yet? Data saturation in qualitative research. *The Qualitative Report*, *20*(9), 1408–1416.

Gagnon, R., Jacobs, L., Vaillancourt, F., & Vaillancourt, L. (2003). *Canada' s IT labour force, 1961-2001: Four decades of growth*. Ottawa, ON: ICTC.

Gherardi, S., & Poggio, B. (2001). Creating and recreating gender order in organizations. *Journal of World Business*, *36*(3), 245–259.

Gianakos, I. (1999). Patterns of career choice and career decision-making self-efficacy. *Journal of Vocational Behavior*, *54*(2), 244–258.

Ginzberg, M., & Baroudi, J. (1992). Career orientations of I.S. personnel. In *Proceedings of the 1992 ACM SIGCPR Conference on Computer Personnel Research* (pp. 41–55). New York, NY: ACM Press.

Glass, C., & Cook, A. (2016). Leading at the top: Understanding women's challenges above the glass ceiling. *Leadership Quarterly*, *27*(1), 51–63.

Government of Canada. (2016a). Registration - In-house organization: Software Human Resource Council Canada Inc. Retrieved from https://lobbycanada.gc.ca/app/secure/ocl/lrs/do/vwRg;jsessionid=0001AsgYBMO7e5E1mtl4s_irMsY:-5B9F?cno=13160&regId=500635

Government of Canada. (2016b). Waterloo region: Invest in Canada. Retrieved from http://www.international.gc.ca/investors-investisseurs/cities-villes/waterloo.aspx?lang=eng

Gumbus, A., & Grodzinsky, F. (2004). Gender bias in internet employment: A study of career advancement opportunities for women in the field of ICT. *Journal of Information, Communication and Ethics in Society*, *2*(3), 133–142.

Hamori, M. (2006). Executive career advancement in career moves across employers: The role of organization-level predictors. *The International Journal of Human Resource Management*, *17*(6), 1129–1151.

Hanappi-Egger, E. (2012). "Shall I stay or shall I go"?: On the role of diversity management for women's retention in SET professions. *Equality, Diversity and Inclusion: An International Journal*, *31*(2), 144–157.

Headlam-Wells, L., Gosland, J., & Craig, J. (2005). "There's magic in the web": E-mentoring for women's career development. *Career Development International*, *10*(6), 449–459.

Heilman, M., & Haynes, M. (2005). No credit where credit is due: Attributional rationalization of women's success in male-female teams. *The Journal of Applied Psychology*, *90*(5), 905–916.

Hill, K. (2013). We've come a long way baby... or have we? *Journal of Organizational Culture, Communications, and Conflict*, *17*(2), 29–36.

Hoobler, J., Lemmon, G., & Wayne, S. (2014). Women's managerial aspirations: An organizational development perspective. *Journal of Management*, *40*(3), 703–730.

Hoopes, J. (1979). *Oral history: An introduction for students*. Chapel Hill, NC: University of North Carolina Press.

Hoyt, C. L., & Murphy, S. E. (2016). Managing to clear the air: Stereotype threat, women, and leadership. *Leadership Quarterly*, *27*(3), 387–399.

Hughes, E. C. (1928). *A study of a secular institution: The Chicago Real Estate Board*. University of Chicago, Chicago, IL.

Hughes, E. C. (1937). Institutional office and te person. *American Journal of Sociology*, *43*(3), 404–413.

Hutchinson, K., & Wegge, D. (1991). Effects of interviewer gender upon response in telephone survey research. *Journal of Social Behavior and Personality*, *6*(3), 573–584.

Hymowitz, C., & Schellhardt, T. D. (1986). The glass-ceiling: Why women can't seem to break the invisible barrier that blocks them from top jobs. *The Wall Street Journal (March 24)*, 1D–24D.

Ibarra, H. (2004). Men and women of the corporation and the change masters: Practical theories for changing times. *Academy of Management Executive*, *18*(2), 108–111.

Ibarra, H., Carter, N., & Silva, C. (2010). Why men still get more promotions than women. *Harvard Business Review*, *88*(9), 80–85, 126. Retrieved from https://hbr.org/2010/09/why-men-still-get-more-promotions-than-women

Ibarra, H., Ely, R., & Kolb, D. (2013). Women rising: The unseen barriers. *Harvard Business Review*, *91*(9), 60–68. Retrieved from https://hbr.org/2013/09/women-rising-the-unseen-barriers

ICTC. (2013). *Nova Scotia information and communications technology sector: Regional labour market information*. Ottawa, ON: ICTC. Retrieved from http://www.ictc-ctic.ca/wp-content/uploads/2013/01/ICTC_NOVASCOTIA_LabourMarketReport_2013.pdf

ICTC. (2015a). *Advancing and attracting women in ICT*. Ottawa, ON: ICTC. Retrieved from http://www.ictc-ctic.ca/what-we-do/programs/talent-programs/women-in-ict/

ICTC. (2015b). *Digital economy annual review*. Ottawa, ON: ICTC. Retrieved from http://www.ictc-ctic.ca/wp-content/uploads/2015/06/Annual-Review-2015-ENGLISH.pdf

ICTC. (2016a). *Digital economy annual review*. Ottawa, ON: ICTC. Retrieved from http://www.ictc-ctic.ca/wp-content/uploads/2016/11/ICTC-Annual-Review-2016-ENGLISH.pdf

ICTC. (2016b). *Digital talent road to 2020 and beyond: A national strategy to develop Canada's talent in a global digital economy*. Ottawa, ON: ICTC. Retrieved from http://www.ictc-ctic.ca/wp-content/uploads/2016/03/ICTC_DigitalTalent2020_ENGLISH_FINAL_March 2016.pdf

Industry Canada. (2014). *Digital Canada 150*. Ottawa, ON: Government of Canada. Retrieved from https://www.ic.gc.ca/eic/site/028.nsf/eng/h_00569.html

Ituma, A. (2006). The internal career: An explorative study of the career anchors of Information Technology workers in Nigeria. In *Proceedings of the 2006 ACM SIGMIS CPR Conference on Computer Personnel Research* (pp. 205–212). New York, NY: ACM Press.

Ivany, R. (2014). *Now or never: An urgent call to action for Nova Scotians (The report of the Nova Scotia Commission on Building our New Economy)*. Halifax, NS: Government of Nova Scotia. Retrieved from http://onens.ca/wp-content/uploads/Now_or_never_short.pdf

Jackson, D. (2012). Dexter hails IBM plan for Halifax global delivery centre. *Chronicle Herald*. Halifax, NS. Retreived from http://thechronicleherald.ca/business/166107-dexter-hails-ibm-plan-for-halifax-global-delivery-centre. Retrieved from http://thechronicleherald.ca/business/166107-dexter-hails-ibm-plan-for-halifax-global-delivery-centre

Jackson, J., & O'Callaghan, E. (2009). What do we know about glass ceiling effects? A taxonomy and critical review to inform higher education research. *Research in Higher Education*, *50*(5), 460–482.

Joseph, D., Boh, W., Ang, S., & Slaughter, S. (2012). Career paths less (or more) travelled: A sequence analysis of IT career histories, mobility patterns, and career success. *MIS Quarterly*, *36*(2), 427–452.

Joshi, K., & Kuhn, K. (2005). Examining the masculinity and femininity of critical attributes necessary to succeed in IT. In *Proceedings of the 2005 ACM SIGMIS CPR Conference on Computer Personnel Research* (pp. 32–35). New York, NY: ACM Press.

Joshi, K., & Kuhn, K. (2007). What it takes to succeed in information technology consulting: Exploring the gender typing of critical attributes. *Information Technology & People*, *20*(4), 400–424.

Judge, T., Cable, D., Boudreau, J., & Bretz, J. (1995). An empirical investigation of the predictors of executive career success. *Personnel Psychology*, *48*(3), 485–519.

Junquera, B. (2011). Where does female entrepreneurial human capital come from? A review of the literature. *Innovation: Organization & Management*, *13*(3), 391–411.

Kanter, R. M. (1977). *Men and women of the corporation*. New York, NY: Basic Books.

Kay, K., & Shipman, C. (2014). The confidence gap. *The Atlantic*. Washington, DC: Retreived from http://www.theatlantic.com/features/archive/2014/04/the-confidence-gap/359815/. Retrieved from http://www.theatlantic.com/features/archive/2014/04/the-confidence-gap/359815/

Keller, J. (2005). In genes we trust: The biological component of psychological essentialism and its relationship to mechanisms of motivated social cognition. *Journal of Personality and Social Psychology*, *88*(4), 686–702.

Kirchmeyer, C. (1998). Determinants of managerial career success: Evidence and explanation of male/female differences. *Journal of Management*, *24*(6), 673–692.

Kirkpatrick, S. A., & Locke, E. A. (1991). Leadership: Do traits matter? *Academy of Management Executive*, *5*(2), 48–59.

Klettner, A., Clarke, T., & Boersma, M. (2016). Strategic and regulatory approaches to increasing women in leadership: Multilevel targets and mandatory quotas as levers for cultural change. *Journal of Business Ethics*, *133*(3), 395–419.

Korman, A., & Korman, R. (1980). *Career success and personal failure*. New York, NY: Prentice-Hall.

Kristof-Brown, A., Zimmerman, R., & Johnson, E. (2005). Consequences of individuals' fit at work: A meta-analysis of person-job, person-organization, person-group, and person-supervisor fit. *Personnel Psychology*, *58*(2), 281–342.

Kurtulus, F. (2012). Affirmative action and the occupational advancement of minorities and women during 1973-2003. *Industrial Relations*, *51*(2), 213–246.

Kurtulus, F., & Tomaskovic-Devey, D. (2011). Do female top managers help women to advance? A panel study using EEO-1 records. *The Annals of the American Academy of Political and Social Science*, *639*(1), 173–197.

Lapowsky, I. (2014). Ths is what tech's ugly gender problem really looks like. *WIRED*. San Francisco, CA: Retreived from https://www.wired.com/2014/07/gender-gap/.

Latrese Page, T. (2005). *A phenomenological study of female executives in Information Technology companies in the Washington, D.C. area*. (Unpublished doctoral dissertation). University of Phoenix, Phoenix, AZ.

Lee, D., Trauth, E., & Farwell, D. (1995). Critical skills and knowledge requirements of IS professionals: A joint academic/industry investigation. *MIS Quarterly*, *19*(3), 313–340.

Lee, P. (2002). Career goals and career management strategy among information technology professionals. *Career Development International*, *7*(1), 6–13.

Legge, K. (1995). What is human resource management? In *Human resource management: Rhetoric and realities* (pp. 62–95). Basingstoke, UK: Macmillan.

Levanon, A., & Grusky, D. (2016). The persistence of extreme gender segregation in the twenty-first century. *American Journal of Sociology*, *122*(2), 573–619.

Levinson, D. (1977). Mid-life transition: A period in adult psychosocial development. *Psychiatry*, *40*(2), 99–112.

Levinson, D. J. (1984). The career is in the life structure, the life structure is in the career: An adult development perspective. In M. B. Arthur, L. Ballyn, D. J. Levinson, & A. H. Shephard (Eds.), *Working with careers* (pp. 49–74). New York, NY: Columbia University, School of Business.

Levinson, D. J., Darrow, C. N., Klein, E. B., Levinson, M. H., & McKee, B. (1978). *The seasons of a man's life*. New York, NY: Knopf.

Levinson, D. J., & Levinson, D. J. (1996). *The seasons of a woman's life*. New York, NY: Knopf.

Li, P. (2000). *Cultural diversity in Canada: The social construction of racial differences*. Ottawa, ON: Department of Justice, Government of Canada. Retrieved from http://www.justice.gc.ca/eng/rp-pr/csj-sjc/jsp-sjp/rp02_8-dr02_8/rp02_8.pdf

Linehan, M., & Walsh, J. (2000). Work-family conflict and the senior female international manager. *British Journal of Management*, *11*(s1), S49–S58.

Lyness, K., & Thompson, D. (2000). Climbing the corporate ladder: Do female and male executives follow the same route? *Journal of Applied Psychology*, *85*(1), 86–101.

Lyons, D., Mcarthur, C., & Devries, K. (2007). Gender's unspoken role in leadership evaluations. *Human Resource Planning*, *30*(3), 24–32.

Mainiero, L. A. (1994). Getting anointed for advancement: The case of executive women. *Academy of Management Executive*, *8*(2), 53–67.

Marshall, J. (1995). Gender and management: A critical review of research. *British Journal of Management*, *6*(s1), S53–S62.

Martin-Alcazar, F., Romero-Fernandez, P., & Sanchez-Gardey, G. (2011). Effects of diversity on group decision-making processes: The moderating role of human resource management. *Group Decision and Negotiation*, *21*(5), 677–701.

Massimino, P. M., & Kopelman, R. E. (2012). Management practices and organizational performance: A longitudinal analysis using cross-lagged data. *Journal of Global Business Management*, *8*(2), 58–65.

Mays, N., & Pope, C. (2000). Qualitative research in health care: Assessing quality in qualitative research. *British Medical Journal*, *320*(7226), 50–52.

McCord, R. (2000). *Analysis of the national study of postsecondary faculty: Does a gender gap persist among science faculty?* (Unpublished doctoral dissertation). Arizona State University, Phoenix, AZ.

McKinsey Consulting. (2011). *Unlocking the full potential of women in the economy*. Toronto, ON: McKinsey & Company. Retrieved from Unlocking%0Athe%0Afull%0Apotential%0Aof%0Awomen%0Ain%0Athe%0Aeconomy%0A.

Miller, D. C., & Form, W. H. (1951). *Industrial sociology*. New York, NY: Harper & Bros.

Moody, J. W., Beise, C. M., Woszczynski, A. B., & Myers, M. E. (2003). Diversity and the information technology workforce: Barriers and opportunities. *The Journal of Computer Information Systems*, *43*(4), 63–71.

Morgan, A., & Trauth, E. (2006). Women and social capital networks in the IT workforce. In *Encyclopedia of gender and information technology* (pp. 1245–1251). Hershey, PA: IGI Global.

Morrison, A., & Von Glinow, A. (1990). Women and minorities in management. *American Psychologist*, *45*(2), 200–208.

Morrison, A., White, R., & Von Velsor, E. (1987). *Breaking the glass ceiling: Can women reach the top of America's largest corporations?* Reading, MA: Addison-Wesley.

Moss, P. (2007). Emergent methods in feminist research. In S. N. Hesse-Biber (Ed.), *Handbook of feminist research: Theory and praxis* (pp. 371–389). Thousand Oaks, CA: Sage Publications.

NationMaster. (2016). Group of 7 countries (G7) stats. Retrieved from http://www.nationmaster.com/country-info/groups/Group-of-7-countries-(G7)

Natural Sciences and Engineering Research Council of Canada. (2010). *Women in science and engineering*. Ottawa, ON: NSERC.

Nelson-Porter, B. L. (2004). *Women executives in the information technology arena*. (Unpublished doctoral dissertation). University of Phoenix, Phoenix, AZ.

Ng, E. S., & Sears, G. J. (2017). The glass ceiling in context: The influence of CEO gender, recruitment practices and firm internationalisation on the representation of women in management. *Human Resource Management Journal*, *27*(1), 133–151.

Niederman, F., & Krasteva, S. (2012). Observations regarding the history of the study of computer personnel. In *Proceedings of the 50th Annual Conference on Computers and People Research - SIGMIS-CPR '12* (p. 189). New York, NY: ACM Press.

Noon, M. (2007). The fatal flaws of diversity and the business case for ethnic minorities. *Work, Employment & Society*, *21*(4), 773–784.

Ontario Securities Commission. (2013). *OSC Staff Consultation Paper 58-401 Disclosure Requirements Regarding Women on Boards and in Senior Management*. Toronto.

Ontario Securities Commission. (2014). *Multilateral CSA notice of amendments to national instrument 58-101: Disclosure of corporate governance practices*. Toronto, ON: Government of Ontario. Retrieved from http://www.osc.gov.on.ca/en/SecuritiesLaw_csa_20141014_58-101_noa-national-instrument.htm

Pennings, J. (1973). Measures of organizational structure: A methodological note. *American Journal of Sociology*, *79*(3), 686–704.

Pfleeger, S. L., & Mertz, N. (1995). Executive mentoring: What makes it work? *Communications of the ACM*, *38*(1), 63–73.

Polkinghorne, D. E. (2005). Language and meaning: Data collection in qualitative research. *Journal of Counseling Psychology*, *52*(2), 137–145.

Preville, P. (2014). Big winner: Women in business. *Canadian Business*, (Winter 2013/2014), 26–27.

Quesenberry, J., & Trauth, E. (2012). The (dis)placement of women in the IT workforce: An investigation of individual career values and organisational interventions. *Information Systems Journal*, *22*(6), 457–473.

Quesenberry, J., Trauth, E., & Morgan, A. J. (2006). Understanding the “mommy tracks”: A framework for analyzing work-family balance in the IT workforce. *Information Resources Management Journal*, *19*(2), 37–53.

Richard, O., & Johnson, N. (2001). Understanding the impact of human resource diversity practices on firm performance. *Journal of Managerial Issues*, *13*(2), 177–195.

Ridgeway, C. (2001). Gender, status, and leadership. *Journal of Social Issues*, *57*(4), 637–655.

Ridgeway, C. L., & Correll, S. J. (2004). Unpacking the gender system: A theoretical perspective on gender beliefs and social relations. *Gender & Society*, *18*(4), 510–531.

Riemenschneider, C., Armstrong, D., Allen, M., & Reid, M. (2006). Barriers facing women in the IT work force. *ACM SIGMIS Database Newsletter*, *37*(4), 58–78.

Roldan, M. (2004). Perceptions of chilly IT organizational contexts and their effect on the retention and promotion of women in IT. *ACM SIGMIS Database*, 108–113.

Roose, K. (2015). The life, death, and rebirth of BlackBerry's hometown. Retrieved from http://fusion.net/story/45438/the-life-death-and-rebirth-of-blackberrys-hometown/

Rothwell, W. (2010). *Effective succession planning: Ensuring leadership continuity and building talent from within* (4th ed.). New York, NY: AMACOM.

Ryan, G., & Bernard, H. . R. (2003). Techniques to identify themes. *Field Methods*, *15*(1), 85–109.

Ryan, M., Haslam, S., Morgenroth, T., Rink, F., Stoker, J., & Peters, K. (2016). Getting on top of the glass cliff: Reviewing a decade of evidence, explanations, and impact. *Leadership Quarterly*, *27*(3), 446–455.

Sagas, M., & Cunningham, G. B. (2004). Does having "the right stuff" matter? Gender differences in the determinants of career success among intercollegiate athletic administrators. *Sex Roles*, *50*(5/6), 411–421.

Saldana, J. (2008). An introduction to codes and coding. In *The coding manual for qualitative researchers* (pp. 1–31). Los Angeles, CA: Sage.

Sandberg, S. (2013). *Lean in: Women, work, and the will to lead*. New York, NY: Knopf.

Schein, E. (1971). The individual, the organization, and the career: A conceptual scheme. *The Journal of Applied Behavioral Science*, *7*(4), 401–426.

Schein, E. (1987). Individuals and careers. In J. Lorsch (Ed.), *The handbook of organizational behaviour* (pp. 155–171). Englewood Cliffs, NJ: Prentice-Hall.

Schein, E. (1990). *Career anchors: Discovering your real values*. San Diego, CA: Pfeiffer & Company.

Schwartz, B. (1981). *Vertical classification: A study in structuralism and the sociology of knowledge*. Chicago, IL: University of Chicago Press.

Schwartz, Z. (2016). Canada's top computer science universities 2016: Full results. *Macleans*. Toronto, ON. Retreived from http://www.macleans.ca/education/canadas-top-computer-science-universities-2016-full-results/.

Scott, K., Heathcote, J., & Gruman, J. (2011). The diverse organization: Finding gold at the end of the rainbow. *Human Resource Management*, *50*(6), 735–755.

Seibert, S., Kraimer, M., & Liden, R. (2013). A social capital theory of career success. *Academy of Management Journal*, *44*(2), 219–237.

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, *22*(2), 63–75.

Shortt, K., & O'Neil, K. (2009). *ICT and women*. Ottawa, ON: ICTC. Retrieved from http://www.itac.ca/uploads/pdf/Women_and_ICT.pdf

Smith, P. (2012). How are women's glass ceiling beliefs related to career success? *Career Development International*, *17*(5), 458–474.

Soe, L., & Yakura, E. (2008). What's wrong with the pipeline? Assumptions about gender and culture in IT work. *Women's Studies*, *37*(3), 176–201.

Sojo, V., Wood, R. E., Wood, S., & Wheeler, M. (2016). Reporting requirements, targets, and quotas for women in leadership. *Leadership Quarterly*, *27*(3), 519–536.

Sonnenfeld, J. (1989). Career system profiles and strategic staffing. In *Handbook of career theory* (pp. 202–224). Cambridge, MA: Cambridge University Press.

Spiers, C. (2008). The business benefits of diversity. *Management Services*, *52*(2), 26–30.

Stake, R. (2006). *Multiple case study analysis*. New York, NY: Guilford Press.

Statistics Canada. (2011a). *National occupational classification (NOC). Catalogue 12-583-X*. Ottawa, ON: Statistics Canada. Retrieved from http://www.statcan.gc.ca/pub/12-583-x/12-583-x2011001-eng.pdf

Statistics Canada. (2011b). *Postsecondary enrollments. Table 477-0029*. *CANSIM*. Ottawa, ON: Statistics Canada.

Statistics Canada. (2013). *2011 National household survey. Catalogue 99-012-X2011051*. *CANSIM*. Ottawa, ON: Statistics Canada.

Statistics Canada. (2014). *Labour force survey estimates, by sex and detailed age group, annual (Persons unless otherwise noted). Table 282-0002*. *CANSIM*. Ottawa, ON: Statistics Canada. Retrieved from http://www5.statcan.gc.ca/cansim/a26?lang=eng&id=2820002

Statistics Canada. (2016a). *Population by year, by province and territory. Table 051-0001*. *CANSIM*. Ottawa, ON: Statistics Canada.

Statistics Canada. (2016b). *Population of census metropolitain areas. Table 051-0056*. *CANSIM*. Ottawa, ON: Statistics Canada.

Stevens, F. G., Plaut, V. C., & Sanchez-Burks, J. (2008). Unlocking the benefits of diversity: All-inclusive multiculturalism and positive organizational change. *The Journal of Applied Behavioral Science*, *44*(1), 116–133.

Stewart, A. (1994). Toward a feminist strategy for studying women's lives. In C. Franz & A. Stewart (Eds.), *Wome creating lives: Identities, resilience, and resistance* (pp. 11–35). Boulder, CO: Westview Press.

Strauss, A. (1989). *Qualitative analysis for social scientists*. Cambridge, MA: Cambridge University Press.

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research*. Cambridge, MA: Cambridge University Press.

Sullivan, S. E. (1999). The changing nature of careers: A review and research agenda. *Journal of Management*, *25*(3), 457–484.

Sullivan, S. E., & Mainiero, L. (2008). Using the Kaleidoscope Career Model to understand the changing patterns of women's careers: Designing HRD programs that attract and retain women. *Advances in Developing Human Resources*, *10*(1), 32–49.

Sumner, M., & Werner, K. (2001). The impact of gender differences on the career experiences of Information Systems professionals. In *Proceedings of the 2001 ACM SIGCPR Conference on Computer Personnel Research* (pp. 125–131). New York, NY: ACM Press.

Sundheim, D. (2013). Do women take as many risks as men? *Harvard Business Review*, *91*(2), Retreived from https://hbr.org/2013/02/do-women-ta. Retrieved from https://hbr.org/2013/02/do-women-take-as-many-risks-as

Super, D. E. (1957). *The psychology of careers*. New York, NY: Harper.

Super, D. E. (1980). A life-span, life-space approach to career development. *Journal of Vocational Behavior*, *16*(3), 282.

Super, D. E. (1990). A life-span, life-space approach to career development. In D. Brown & L. Brooks (Eds.), *Career choice and development: Applying contemporary theories to practice* (2nd ed., pp. 197–261). San Francisco, CA: Jossey-Bass.

Super, D. E., & Hall, D. (1978). Career development: Exploration and planning. *Annual Review Of Psychology*, *29*, 330–372.

Suriyamurthi, S., Velavan, M., & Radhiga, T. D. (2013). Importance of leadership in innovations of HR practices. *Advances in Management*, *6*(11), 47–54.

Sutton, N. (2004). B.C. outsourcing spree amps up privacy concerns. Retrieved from http://www.itbusiness.ca/news/b-c-outsourcing-spree-amps-up-privacy-concerns/2089

Tapia, A. (2006). Hostile work environment.com: Increasing participation of underrepresented groups , lessons learned from the dot-com era. *ACM SIGMIS Database Newsletter*, *37*(4), 79–98.

Tharenou, P. (1997). Explanations of managerial career advancement. *Australian Psychologist*, *32*(1), 19–28.

Tharenou, P. (2001). Going up? Do traits and informal social processes predict advancement in management? *Academy of Management Journal*, *44*(5), 1005–1017.

Tharenou, P. (2005). Does mentor support increase women's career advancement more than men's? The differential effects of career and psychosocial support. *Australian Journal of Management*, *30*(1), 77–109.

Tharenou, P. (2012). The work of feminists is not yet done: The gender pay gap—A stubborn anachronism. *Sex Roles*, *68*(3–4), 198–206.

Tharenou, P., Latimer, S., & Conroy, D. (1994). How do you make it to the top? An examination of influences on women's and men's managerial advancement. *Academy of Management Journal*, *37*(4), 899–932.

Trauth, E. (2002). Odd girl out: An individual differences perspective on women in the IT profession. *Information Technology & People*, *15*(2), 98–118.

Trauth, E. (2006). Theorizing gender and information technology research. In E. Trauth (Ed.), *Encyclopedia of gender and information technology* (pp. 1154–1159). Hershey, PA: Idea Group Publishing.

Trauth, E. (2011). What can we learn from gender research? Seven lessons for business research methods. *The Electronic Journal of Business Research Methods*, *9*(1), 1–9.

Trauth, E., Adya, M., Armstrong, D., Joshi, K., Kvasny, L., Riemenschneider, C., & Quesenberry, J. (2010). Taking stock of research on gender and the IT workforce. In *Proceedings of the 48th Annual Conference on Computer Personnel Research* (pp. 171–178). New York, NY: ACM Press.

Trauth, E., Quesenberry, J., & Huang, H. (2009). Retaining women in the U.S. IT workforce: Theorizing the influence of organizational factors. *European Journal of Information Systems*, *18*(5), 476–497.

Trauth, E., Quesenberry, J., Huang, H., & McKnight, S. (2008). Linking economic development and workforce diversity through action research. In *Proceedings of the 2008 ACM SIGMIS CPR Conference on Computer Personnel Doctoral Consortium and Research* (pp. 58–65). New York, NY: ACM Press.

Trauth, E., Quesenberry, J., & Morgan, A. (2004). Understanding the under representation of women in IT: Toward a theory of individual differences. In *Proceedings of the 2004 ACM SIGMIS Conference on Computer Personnel Research* (pp. 114–119). New York, NY: ACM Press.

Trauth, E., Quesenberry, J., & Yeo, B. (2008). Environmental influences on gender in the IT workforce. *ACM SIGMIS Database*, *39*(1), 8–32.

Tripp-Knowlls, P. (1995). A review of the literature on barriers encountered by women in science academia. *Resources for Feminist Research*, *24*(1/2), 28–34.

Turner, P., & Kalman, D. (2015). Make your people before making your products. *Human Resource Management International Digest*, *23*(1), 28–31.

University of British Columbia. (2016). Women in computer science. Retrieved from https://www.cs.ubc.ca/our-department/women

University of Victoria. (2016). Women in engineering and computer science. Retrieved from https://www.uvic.ca/engineering/computerscience/community/index.php

Vachon, B., & Lavis, C. (2013). *Women in leadership: Perceptions and priorities for change*. Ottawa, ON: The Conference Board of Canada.

Valian, V. (1998a). *Why so slow? The advancement of women*. Cambridge, MA: MIT Press.

Valian, V. (1998b). *Why so slow? The advancement of women*. Cambridge, MA: MIT Press.

Van den Berg, M. E. (2011). Bodies as open projects: Reflections on gender and sexuality. *South African Journal of Philosophy*, *30*(3), 385–402.

Vial, A. C., Brescoll, V. L., & Napier, J. (2016). A bed of thorns: Female leaders and the self-reinforcing cycle of illegitimacy. *The Leadership Quarterly*, *27*(3), 400–414.

Vinnicombe, S., & Singh, V. (2011). Locks and keys to the boardroom. *Gender in Management: An International Journal*, *26*(3), 200–211.

Von Glinow, M. (1988). *The new professionals: Managing today's high tech employees*. Cambridge, MA: Ballinger Publications Company.

Von Hellens, L., Trauth, E., & Fisher, J. (2012). Special edition on women in IT: Editorial. *Information Systems Journal*, *22*(5), 343–353.

Wajcman, J. (1991). *Feminism confronts technology*. University Park, PA: University Press.

Waterloo Region Economic Development Corporation. (2016). Information technology. Retrieved from http://www.wredc.ca/en/industry-sectors/Information-Technology.asp

Weidenfeller, N. K. (2012). Breaking through the glass wall: The experience of being a woman enterprise leader. *Human Resource Development International*, *15*(3), 365–374.

Weinberger, C. (2011). In search of the glass ceiling: Gender and earnings growth among U.S. college graduates in the 1990s. *International and Labour Relations Review*, *64*(5), 949–980.

Whelan-Berry, K. S., & Gordon, J. R. (2000). Strengthening human resource strategies: Insights from the experiences of midcareer professional women. *Human Resource Planning*, *23*(1), 26–37.

Wilfred Laurier University. (2016). Centre for women in science. Retrieved from https://legacy.wlu.ca/homepage.php?grp_id=13090

Williams, J. C. (2014). Hacking tech's diversıty problem. *Harvard Business Review*, *92*(10), 94–100.

Williams, J. C., Manvell, J., & Bornstein, S. (2006). *"Opt out" or pushed out? How the press covers work/family conflict: The untold story of why women leave the workforce*. San Francisco, CA: The Centre for WorkLife Law, University of California.

Wilson, E. K. (2001). Breaking glass? *Trends in Biochemical Sciences*, *26*(9), 526–528. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/11684430

Wittenberg-Cox, A. (2013). Stop fixing women, start building management competencies. In S. Vinnicombe, R. J. Burke, S. Blake-Beard, & L. Moore (Eds.), *Handbook of research on promoting women's careers* (pp. 106–115). Cheltenham, UK: Edward Elgar Publishing.

Wood, G. J. (2003). What does it take to get to the top: Do middle and senior managers agree? *Women in Management Review*, *18*(3), 122–131.

Wood, G. J. (2006). Career advancement in Australian middle managers: A follow-up study. *Women in Management Review*, *21*(4), 277–293.

Wood, G. J. (2008). Gender stereotypical attitudes: Past, present and future influences on women's career advancement. *Equal Opportunities International*, *27*(7), 613–628.

World Economic Forum. (2016). The global gender map report. Retrieved from http://reports.weforum.org/global-gender-gap-report-2016/

Yin, R. K. (2014). *Case study research design and methods* (5th ed.). Thousand Oaks, CA: Sage Publications.

APPENDIX A – CONSENT FROM

Project Title: Career histories of senior information and communications technology leaders from Nova Scotia, British Columbia, and Ontario. Understanding career advancement barriers and enablers for women and men.

Principal Investigator: Jules Fauteux, Interdisciplinary PhD Student, Graduate Studies
Contact Person: Jules Fauteux, jules.fauteux@dal.ca [902-233-3739]

We invite you to take part in a research study at Dalhousie University. The study is sponsored by the provincial Information and Communications Technology (ICT) industry association Digital Nova Scotia (DNS) in association with the Society for Canadian Women in Science and Technology (SCWIST) and its applicable British Columbia partner organizations, as well as Communitech and its applicable Ontario partner organizations. The study is described below. Your participation in this study is voluntary, and you may withdraw from the study at any time before you have reviewed and approved study content which relates to you as described below. This study does not involve any additional risk to you or to others outside of those posed in everyday life. Your participation in the study might not benefit you directly, but we might learn things that will benefit others. You should discuss any questions you have about the study with the Principal Investigator, Jules Fauteux, who will be administering the study.

The study will contribute to a better understanding of (ICT) leadership development and in particular to executive career management for both men and women. Human resource management practices that contribute to career advancement will be explored including factors such as gender. The study may have an impact on human resource management practices among ICT companies. Industry associations and governments at provincial and federal levels may use the study results to inform policy decisions.

Your participation will consist of 2 interviews each of approximately 90 minutes duration. The elapsed time is expected to be up to 3 months. You will be expected to read, revise, and approve any quotations that may be attributed to you in the study. The time commitment expected from you for interviews is in the range of 4 hours over the 3 month period.

The study is targeting 36 senior ICT executives who have advanced in their careers at Nova Scotia, British Columbia, or Ontario ICT employers. To be eligible to participate you should be currently employed as a senior executive in the ICT sector anywhere in the world and have been a senior executive at one or more of Nova Scotia, Ontario or British Columbia's ICT companies for at least 5 years of your career. For the purposes of this study, 'senior executive' is anticipated to be defined as either being (having been) the most senior company representative in Nova Scotia, British Columbia, or Ontario, or having (had) a direct reporting relationship to the most senior representative. There may be minor exceptions to these criteria. You may withdraw from the study any time prior to approving, in writing, any quotes which are attributed to you. Before interviews are conducted, you will be advised not to answer any questions or offer any information that might contravene any confidentiality agreements of your past or present employers. You will be advised to avoid answering any questions that you think would be a risk to you in any way.

You will have an opportunity to review, change, and approve any quotations attributed to you in any part of the study or in any deliverables produced. Your written authorization to publish any quotations attributed to you will be obtained before publication using the additional consent requests on the following pages of this form.

All consent documentation and all research data will be kept in a secure Dalhousie University location for 10 years after the end of the study after which they will be destroyed. Interviews will be conducted over the telephone and will be recorded on a digital audio recorder which will subsequently be transcribed by a professional transcriber who will be subject to a confidentiality agreement. Audio recordings and transcriptions will only be available to the Principal Investigator and his PhD Advisory Committee. Documentation and any direct quotations will be shared between you and the Principal Investigator by email using email accounts you provide. Best efforts will be taken by the Principal Investigator to safeguard these emails but they are vulnerable to common security risks and potential abuse. Similarly, telephone conversations and conference calls are subject to security risks including possible abuse of content by other participants.

The Principal Investigator for this study is Jules Fauteux who is a PhD, student at Dalhousie University. He is also a Principal Consultant with Talentlogix Inc. and an Associate of Halifax Global Inc. (HGI) both of which are management consulting firms. HGI provides management consulting services to DNS. This study is not being undertaken by Talentlogix Inc. or HGI. This is a Dalhousie University study sponsored by Digital Nova Scotia (DNS) in association with the Society for Canadian Women in Science and Technology (SCWIST) and its applicable British Columbia partner organizations, as well as Communitech and its applicable Ontario partner organizations as acknowledged in the first paragraph of this Informed Consent Form. Dr. Michael Shepherd is the past Dean of Computer Science at Dalhousie University and the PhD supervisor of Jules Fauteux. Dr. Shepherd is also a member of the Digital Nova Scotia Board of Directors. These relationships are disclosed for the purposes of transparency and to acknowledge any potential conflict of interest.

We hope that you accept this invitation to participate in the study and that you do so with an intent to participate through to its conclusion. Your career has had an impact on the Canadian ICT sector and this study is a unique opportunity that may help further develop the sector and its future leaders.

Your consent to participate is granted by your signature on the following pages of this Informed Consent Form. In the event that you have any questions, or wish to voice concerns, about any aspect of your participation in this study, you may contact Jules Fauteux directly or Catherine Connors, Director, Office of Research Ethics Administration at Dalhousie University's Office of Human Research Ethics, phone (902) 494-1462, email catherine.conners@dal.ca.

Principal Investigator,

Jules Fauteux, PhD Candidate, Dalhousie University
jules.fauteux@dal.ca 902-233-3739

Consent to Participate in the Study

Project Title: Career histories of senior information and communications technology leaders from Nova Scotia, British Columbia, and Ontario. Understanding career advancement barriers and enablers for women and men.

"I *have read the Informed Consent Form which describes this study. I have been given the opportunity to discuss it and my questions have been answered to my satisfaction. I hereby consent to take part in the study. However, I understand that my participation is voluntary and that I am free to withdraw from the study up to the time I have approved any quotes which are attributed to me. Further, I understand that additional written consent will be required for publication of any quotations directly attributable to me."*

Participant Researcher

Name: _____ Name: _____

Signature: _____ Signature: _____

Date: _____ *Date:* _____

"*I agree that the interview sessions and focus group meetings will be audio recorded. I understand that this is a condition of participation in the study, and I understand that this audio record will not be used in publication or presentation of results."*

Participant Researcher

Name: _____ Name: _____

Signature: _____ Signature: _____

Date: _____ *Date:* _____

"*I agree to send and receive information related to this study using the following email accounts:*_____

Participant Researcher

Name: _____ Name: _____

Signature: _____ Signature: _____

Date: _____ *Date:* _____

"*I agree to the use of data obtained in this study for future studies which might be undertaken by the Principal Investigator, provided that I am not quoted or data used is not directly attributable to me without obtaining my additional written consent."*

Participant Researcher

Name: _____ Name: _____

Signature: _____ Signature: _____

Date: _____ *Date:* _____

Additional Consent to Use Direct Quotations (to be used once drafts are provided)

Project Title: Career histories of senior information and communications technology leaders from Nova Scotia, British Columbia, and Ontario. Understanding career advancement barriers and enablers for women and men.

"Further to my consent previously granted to participate in this study, I have reviewed the direct quotes attributed to me in the study as initialed, dated, and attached hereto and consent to their use in the study including their publication."

Participant Researcher

Name: _____ Name: _____

Signature: _____ Signature: _____

Date: _____ *Date:* _____

APPENDIX B – INTERVIEW GUIDE

Interview Purpose and Approach:
Interviews will be used to gather data about the career history of study participants. It is expected that 24 participants will be interviewed - 12 women and 12 men. Interviews are expected to be in the range of 90 minutes, will be conducted by telephone, will be digitally recorded, and will be professionally transcribed. Analysis and documentation following the first interview will produce 24 individual career histories for each of the participants. The career histories are expected to be in the range of 2-4 pages each. Participants will be emailed their individual draft career history a few days prior to second interviews which will be used primarily for validation. *(Note: Draft career histories were only completed for Nova Scotia women)*

Interview Preface:

- Please do not answer any questions or offer any information that might contravene any confidentiality agreements of your past or present employers.
- Avoid answering any questions which you think would be a risk to you in any way.
- You will have an opportunity to review, change, and approve your career history and any quotations attributed to you in any part of the study. *(Note: Only used in Nova Scotia)*
- Your written authorization to the career history and any quotations used in the study will be obtained before publication. *(Note: Not used, no quotations were attributed)*

Interview Questions:

- Please tell me **about your career**. Describe it however you would like.
- Please tell me about **significant roles** you have held. What company were you at, what was your title, how many people reported to you directly and indirectly, what were your responsibilities?
- Please tell me about **significant promotions** you have had which advanced your career. Describe the moment when you realized you had been promoted. What had happened and why?
- Please tell me about any **significant setbacks** in your career. What happened and why?
- Please tell me about **enablers** to your career advancement. When you think about your career history what helped you to advance?
    - Probe factors: Mentors, stretch assignments, internal relationships, external relationships, hard work, business results, performance reviews, skills, training & education, company HR policy or practices, family support, etc.
- Please tell me about **barriers** to your career advancement. When you think about your career history what held you back?
    - Probe factors (lack of): Mentors, stretch assignments, internal relationships, external relationships, hard work, business results, performance reviews, skills, training & education, company HR policy or practices, family support
- Did any **HR practices significantly impact** your career? Which ones? How? If not, why not?
- How you **feel about your career**? What are you most proud of, do you have any regrets?
- If available, would you share a copy of your latest resume, CV, or Bio?

APPENDIX C – SPONSOR LETTER OF SUPPORT

Jules Fauteux, PhD Student
Dalhousie University
6050 University Avenue
Halifax, NOVA SCOTIA
B3H 1W5

October 30, 2013

Dear Jules,

Digital Nova Scotia (DNS) is pleased to take part in a research study at Dalhousie University as a sponsoring organization. We understand the study will contribute to a better understanding of Information Communications Technology (ICT) leadership development and in particular to executive career management for both men and women. Human resource management practices that contribute to career advancement will be explored in the study including factors such as gender. We further understand the study may have an impact on human resource management practices among ICT companies and that the study will produce in the range of 24 individual senior ICT executive career histories including 12 career histories of senior ICT executive women from Nova Scotia.

Digital Nova Scotia's participation will consist of providing contact information to certain of our association members as well as general information about the ICT sector so that the Principal Investigator, Jules Fauteux, can undertake interviews and focus groups directly with them. As a sponsoring organization our support is expected to come mostly through the efforts of the (undersigned) DNS President and CEO in the form of regular meetings and informal communications with the Principal Investigator relating to the ICT sector in Nova Scotia. These meetings will involve discussion and the provision of information about individuals and businesses active in the sector as well the sector's history and evolution. It is expected that this effort will require in the range of 4 hours per month. The (undersigned) DNS President and CEO has read the Tri-Council Policy Statement 'Ethical Conduct for Research Involving Humans' and agrees to abide by these guidelines.

Digital Nova Scotia grants Jules Fauteux and Dalhousie University a perpetual license to use data provided during interviews and focus groups with individual participants. It is understood that DNS will use this data for other purposes and that individual study participants will be made aware of both uses for the data at all times. As a Dalhousie University research study, Digital Nova Scotia will be identified as a sponsor of the study in communications with individual study participants and candidate participants. DNS has reviewed the Informed Consent Form for study participants which

1 Research Drive - Dartmouth - Nova Scotia - Canada - B2Y 4M9
TEL 902.423.5332 - FAX 877.282.9506
digitalnovascotia.com

describes how the study will be conducted and how Digital Nova Scotia's sponsorship will be described.

Digital Nova Scotia understands that the study Principal Investigator, Jules Fauteux, is a PhD student at Dalhousie University. We understand he is also a Principal Consultant with Talentlogix Inc. and an Associate of Halifax Global Inc. (HGI). both of which are management consulting firms. DNS further understands this study is not being undertaken by Talentlogix Inc. or HGI. DNS is aware that Dr. Michael Shepherd is the PhD supervisor of Jules Fauteux and is also a member of the DNS Board of Directors. We understand these relationships are disclosed to study participants and to DNS for the purpose of transparency and to acknowledge any potential conflict of interest.

Digital Nova Scotia agrees to participate in the study as a sponsoring organization and we do so with an intent to participate through to its conclusion. DNS has had a positive impact on the Nova Scotia ICT sector and this study is a unique opportunity which may help to further develop the sector and its future leaders.

In the event that we have any questions, or wish to voice concerns, about any aspect of our participation in this study we are aware that we can contact Catherine Connors, Director, Office of Research Ethics Administration at Dalhousie University's Office of Human Research Ethics, phone (902) 494-1462, email catherine.conners@dal.ca.

Sincerely,

Ulrike Bahr-Gedalia
President and CEO
Digital Nova Scotia

1 Research Drive - Dartmouth - Nova Scotia - Canada - B2Y 4M9
TEL 902.423.5332 - FAX 877.282.9506
digitalnovascotia.com