

GENDER AND VISIBLE MINORITY STATUS: CAREER ADVANCEMENT IN THE CANADIAN INFORMATION AND COMMUNICATIONS TECHNOLOGY SECTOR

Cukier, Wendy, Ryerson University, 350 Victoria Street, Toronto, Ontario, Canada,
wcukier@ryerson.ca

Yap, Margaret, Ryerson University, 350 Victoria Street, Toronto, Ontario, Canada,
myap@ryerson.ca

Holmes, Mark Robert, Ryerson University, 350 Victoria Street, Toronto, Ontario, Canada,
m8holmes@ryerson.ca

Rodrigues, Sara, Ryerson University, 350 Victoria Street, Toronto, Ontario, Canada,
srodriagu@ryerson.ca

Abstract

In spite of the economic downturn, demographic factors are expected to continue to produce a labour shortage particularly in the Information and Communications Technology (ICT) sector. In Canada, the sector has signaled that critical skills shortages exist in certain areas although the extent of these shortages is the subject of much debate. While economists have suggested that by the year 2011, all labor force growth in Canada will come from immigration, research has shown that immigrants often face barriers to full employment. Similarly, women are under-represented in ICT and face a range of barriers to employment and advancement. Increasingly, both government and industry have asserted that more effective “management of diversity” could help alleviate the skills shortage. To date, research has focused on barriers to entering the workplace but less has focused career satisfaction even though there is evidence to suggest that these may have significant impact on employee retention and productivity. The role of demographic factors is complex. For example, in Canada, while all immigrants are not visible minorities and all visible minorities are not immigrants; recent immigrants are more likely to be visible minorities. In addition, the intersection of variables, such as gender and visible minority status, complicates the analysis. Our study examines demographic factors affecting career satisfaction among 7110 managers with a minimum of 10 years experience in nine large Canadian companies in the Information Communications and Technology Sector. We found that the gap between visible minorities and white/Caucasian respondents in perceptions of career satisfaction and factors affecting it, to be larger than the gap in perceptions of male and female respondents. More work is needed to address these issues if the ICT Sector is to effectively deal with the skills shortage.

Keywords: Information Systems Professionals, Job Satisfaction, Gender

1 BACKGROUND

Increasingly government, the private sector and industry organizations are suggesting that effectively managing diversity is, at least in part, the solution to addressing the global labour shortage. Pointing to demographic shifts including the aging baby boomers and declining fertility rates, the Royal Bank of Canada (RBC) has noted that 100% of labour market growth in Canada in 2011 will come from immigration

From an economic point of view, how well Canada continues to meet the challenges of diversity will determine our future success in attracting talented immigrants as global competition for talent intensifies with the aging of Western societies...in the face of potential labour shortages, employers will miss out on opportunities for growth unless they recognize the potential of all groups in Canadian society (RBC, 2005).

The study also points to the under-employment of women, who are under-represented in certain sectors and occupational groups. Strategies to increase the participation of immigrants, women and other under-represented groups have been advocated to ensure that Canada competes effectively in an increasingly globalized economy.

The problem seems to be exacerbated in the Information and Communications Technology (ICT) sector, where for over a decade industry leaders have been talking about the skills shortage (Boisvert, 2007). There is little doubt that enrolments in computer science and engineering have declined. The Information and Communications Technology Council, for example, estimates that new computer science and engineering graduates which will meet 49%-75% of demand (approximately 7,585 positions) annually (ICTC, 2008). "A new survey shows that a growing shortage of IT skills has put upward pressure on salaries as employers choose experienced workers over graduates....a continuation of what [IT World Canada] calls a "sobering trend" will hurt economic growth and productivity "across all industries" (CBC, 2007). While enrolments of women in other professions – medicine, law and business administration – now exceed males, the percentage of female enrolments in computer science and engineering are declining at a time when their participation in other disciplines is increasing. Female enrolment in computer science is the only discipline where the percentage of women is lower than it was in 1992-93 (ICTC, 2007). Some groups, such as the recently formed, Canadian Coalition for Tomorrow's ICT Skills, have suggested that increasing the participation of women in engineering and computer science will help address the skills shortage (Ibaraki, 2008). Others, such as the Information Communications Technology Council (ICTC) have emphasized the importance of immigration in filling the gap, with approximately 7,588 immigrants with ICT skills entering Canada annually (ICTC, 2008).

Scholars and industry analysts alike have considered the under-representation of women in the ICT sector from a variety of perspectives. Sue Rossner systematically outlines no fewer than ten different theoretical perspectives to women and technology in the workforce (2006) and stresses the importance of being self-reflective. Liberal feminism, for example, focuses on employment, access and discrimination issues and ways to identify barriers and overcome them. Other approaches, explores ways in which the social shaping of technology has been constructed in ways that exclude women. For example Adam et. al (2006) suggest that Information Technology (IT) skills are gendered requiring women to distance themselves from their own identities. Ramsey & McCorduck (2005) explore issues related to professional identity in the face of systemic stereotyping, dualism, and devaluation. Essentialist approaches assumes all women are united by their biological characteristics and focus, for example, on women's reproductive role and its implications or on skills and aptitudes considered female. Structural approaches focus on revealing the ways in which patriarchy constrains and focuses on the need for structural and systemic changes. Post-modern feminism questions the very notion of common female experience and posits the notion of multiple identities that are highly context specific. Rossner also describes existentialist, psychoanalytic, racial/ethnic feminism, post-colonial and cyber

feminism. While one might take issue with her categorizations, it is clear that theoretical perspective framing the exploration of this issue shapes the way in which questions are formulated and methods applied. Our study is situated in what is often described as a liberal feminist tradition, based on the assumption that barriers exist to women (and other under-represented groups) which can be identified and addressed to increase participation and advancement in the workplace. We do, however, acknowledge that there are other questions that might be asked.

Currently in Canada, while women are 47% of the workforce, they are only 29% of ICT workers. Females represent only 9% of engineers and 16.7% of programmers compared to 36.8% of analysts and 60.8% of graphic designers and illustrators. (Gunderson et al., 2005). Based on secondary research and interviews with key informants, a study entitled "Diversity – The Competitive Edge: Implications for the ICT Labour Market", (ICTC, 2007) examined barriers to women in the ICT sector. It suggested complex factors affecting participation of women in ICT. Socialization and early education affect the self efficacy and confidence, the development of preferences and choices. Systemic barriers in schools include pedagogical approaches to science and mathematics which are insufficiently applied and the absence of role models, negative perceptions of computing and related work including the “nerd” stereotypes and notions that ICT work is programming. Systemic barriers in post-secondary institutions are similar and have been well documented as creating a “chilly climate” for female engineers and computer scientists (Wasburn and Miller, 2006). In addition, there have been barriers identified to finding employment which include closed recruitment processes and narrow definitions of skills and requirements. Within organizations there are issues related to career advancement, access to training, mentoring, exclusion from informal networks, the absence of role models, stereotypes, communication and negotiation styles and work-life balance issues. Some literature also considers broader socio-political-cultural forces and practices which form the institutional environment of organizations but these issues receive limited attention (For a summary of these see ICTC, 2007).

There is also evidence of under-utilization of immigrants and visible minorities in Canada. While all immigrants are not visible minorities¹ and all visible minorities are not immigrants, recent immigrants are more likely to be visible minorities (Palameta, 2004) and represent a growing proportion of the Canadian population. The data suggest that immigrants tend to be unemployed in spite of their education and technical skill levels. Visible minorities in Toronto face higher unemployment rates than non-visible minorities, although they are more likely to be university educated. There is evidence of under-representation in the ICT sector. Immigrants are 20% of the workforce but only 5% of ICT workers. Visible minorities are 13% of the workforce but only 10% of ICT workers (ICTC, 2007). On average, Visible Minorities experience a 15% wage disadvantage and a 13% earnings disadvantage compared to White/Caucasians (Hum & Simpson, 1999; RBC, 2005). They also face a range of barriers to career advancement (Reitz, 2001).

Similarly, the barriers specific to IEP's included, “inadequate information about the labour market and processes prior to immigration, settlement and job search challenges, inadequate communications/cultural skills, systemic barriers in employment practices, inadequate support in the workplace”. Based on the barriers relating to lack or inadequate workplace support, this paper attempts to examine the subjective perceptions of employees at work.

To date in Canada, there has been much empirical research on the barriers to immigrants on entering employment but much less on the career progression of visible minorities and immigrants. The evidence suggests that immigrants who are also visible minorities face particular challenges not just in

¹ In Canada, the term “visible minority” refers to a person who is not an Aboriginal person, who is non-Caucasian in race or who is “non-white” in colour, as defined under the Employment Equity Act. The following population groups comprise the total visible minority in this study: Arab, Black, Chinese, Filipino, Japanese, Korean, Latin American, Middle Eastern, South Asian, South Asian, West Indian, Southeast Asian, West Indian, and multiple visible minority (referring to those respondents who identified as belonging to more than one visible minority group).

terms of obtaining employment but even after they are employed. Similarly, there has been considerable research on women in technology but limited large scale empirical work. As well, we are interested in the inter-relationship of multiple demographic variables, in particular, gender versus visible minority status.

This study draws on previous work on the under-representation of women and immigrants in the ICT sector as well as the extensive body of literature on career success and satisfaction. For example, Cox and Nkomo (1991) reported that women and minorities have lower levels of objective career success than white males. Harter et al. (2002) found that career satisfaction among immigrants and visible minorities is lower and has a significant impact not only on employee performance and retention but also on organization's productivity and profitability Greenhaus et. al. (1990) studied 828 manager/supervisor pairs and found that blacks reported having less job discretion and lower feelings of acceptance than whites. They also reported receiving fewer promotions and being less satisfied with their careers and were more likely to report negative organizational experiences than whites. Igbaria and Wormley (1992) who focused on the IT profession found evidence that Blacks receive less career support than whites and tended to have lower levels of met expectations and lower levels of career satisfaction than whites.

Given the focus the concerns in the ICT sector about the talent shortage, a better understanding of the factors affecting career satisfaction and organizational commitment is important to understand how to retain well-qualified, productive employees. A variety of factors affect employee satisfaction (Auster, 2001). Research also suggests that employees who are satisfied with their careers are more engaged and thus be more likely to contribute to achievement of organizations' success (Harter et.al., 2002).

2 RESEARCH QUESTIONS

Our study explores five inter-related questions including:

1. Are there differences in organizational commitment between visible minorities versus white Caucasian and male versus female employees in Canadian ICT firms? Are there differences in career satisfaction between visible minorities and white Caucasian employees in Canadian ICT firms. Are there differences between males and females?
2. Are there differences in perceptions of relationships with managers and colleagues between visible minority and white Caucasian employees in Canadian ICT firms. Are there differences between males and females?
3. Are there differences in perceptions of career advancement and development between visible minority and white Caucasian employees in Canadian ICT firms. Are there differences between males and females?
4. Are there differences in perceptions of diversity and inclusion practices between visible minority and white Caucasian employees in Canadian ICT firms. Are there differences between males and females?
5. Are there differences in perceptions of educational attainment and credentials between visible minority and white Caucasian employees in Canadian ICT firms. Are there differences between males and females?

3 METHODOLOGY

This paper utilizes survey data collected as part of a larger study that examined career advancement of visible minorities in corporate Canada (Catalyst et. al., 2007). Over 17,000 pre-managers, managers, professionals and executives from 43 organizations responded to an online survey between October 2006 and February 2007 - a response rate of 29%. The survey asked a range of questions pertaining to demographic, human capital, subjective and objective attributes and perceptions. Of these, 6,783 respondents were employed in ICT sector companies and we have analysed these results below. Of the

full-time employees who responded, 54 percent were male and 50 percent possessed some forms of university education. The average tenure with their respective organizations was 11.4 years, at an average age of 41.7 and an average salary of \$90,775. There are no discernable differences based on the demographic characteristics between the selected sample and the employees who completed the survey with the exception of salary. About 60 percent of the respondents included in the final sample earned \$40,000 or more, compared to only 55 percent of all the respondents to the survey.

4 FINDINGS

All of the survey findings presented below have undergone both t-tests and Chi-square tests, and were found to be significant at $p < 0.05$.

4.1 Organizational Commitment

Most respondents, whether visible minority (87%) or not (90%), indicated that they identify with their organizations core values. Similarly, visible minorities and non-visible minorities both agreed that they were proud to tell others that they are part of their organization (86% and 85% respectively), as well as being willing to put in a great deal of effort beyond what is normally expected to help their organization. As can be seen in Figure 1 below, female (85%) as compared to male (80%) respondents were more inclined to stay with their organization, however visible minority respondents (78%) were less inclined than white/Caucasian respondents (84%) to stay with their organization.

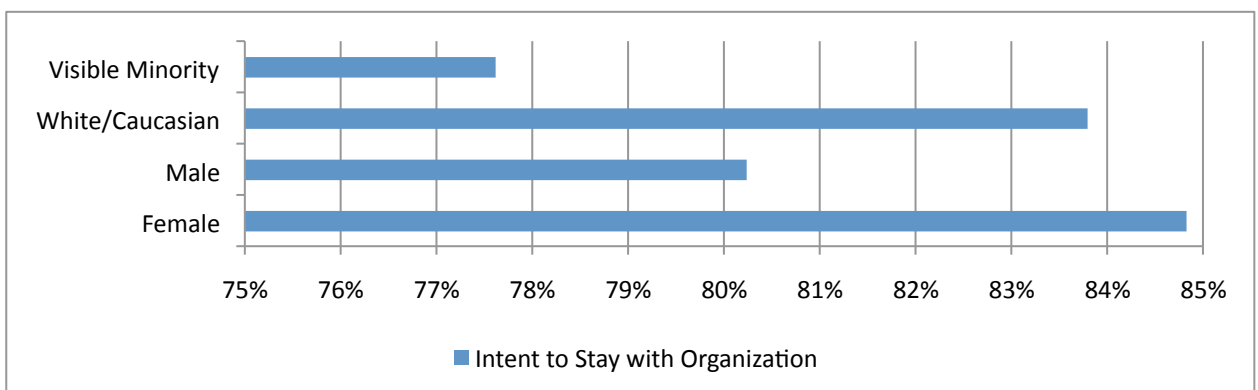


Figure 1. Respondents perceptual intent to stay with their organization.

4.2 Career Satisfaction

While 72% of male respondents indicated they were satisfied with their overall career progress, 79% of females indicated their satisfaction. In contrast, only 65% of visible minority versus 78% of white/Caucasian respondents were satisfied with their overall career satisfaction. Similarly, 65% of female respondents compared to 57% of male respondents were satisfied with their goals for income, as compared to 64% of white/Caucasian versus 51% of visible minority respondents. The perceptions of achieved goals for development also differed between men (60%) and women (69%) as well as white/Caucasians (67%) and visible minorities (52%). The gap (6%) between female (73%) and male (67%) respondents' satisfaction with the progress they had made toward meeting their overall goals for the development of new skills was smaller than the gap (9%) observed between the white/Caucasian (72%) and visible minority (63%) respondents. Table 1 below presents the statistics of the key questions pertaining to the satisfaction of females versus males, as well as white/Caucasians versus visible minorities.

	<i>Female</i>	<i>Male</i>	<i>White/ Caucasian</i>	<i>Visible Minority</i>
Overall Career Goals	79%	72%	78%	65%
Goals for Income	65%	57%	64%	51%
Goals for Advancement	69%	60%	67%	52%
Development of New Skills	73%	67%	72%	63%

Table 1. Respondent satisfaction with the progress they have made toward overall career goals, income goals, goals for advancement, and development of new skills.

4.3 Relationship with Managers and Colleagues

Most respondents indicated that their manager provides them with helpful feedback, although women (73%) were more likely to agree than men (71%), while white/Caucasians (72%) were more likely to agree than visible minorities (70%). There is a significant gap in the perceptions of managerial efforts to learn about their employee’s career goals, between female (78%) compared to men (74%) and white/Caucasians (77%) compared to visible minority (72%) respondents. Similarly, white/Caucasian (89%) respondents compared to visible minority (85%) respondents and female (89%) respondents compared to male (88%) respondents, indicated that they receive the support they need from other co-workers to meet their work objectives. As can be seen in Figure 2 below, the gap (2%) between female (76%) and male (74%) respondent’s indication that their colleagues include them in informal networking is smaller than the gap (11%) between visible minority (66%) and white/Caucasian (77%) respondents. Most white/Caucasian (96%) and visible minority (91%) respondents indicated that their colleagues treat them with respect but, again, white/Caucasians were more likely to indicate this.

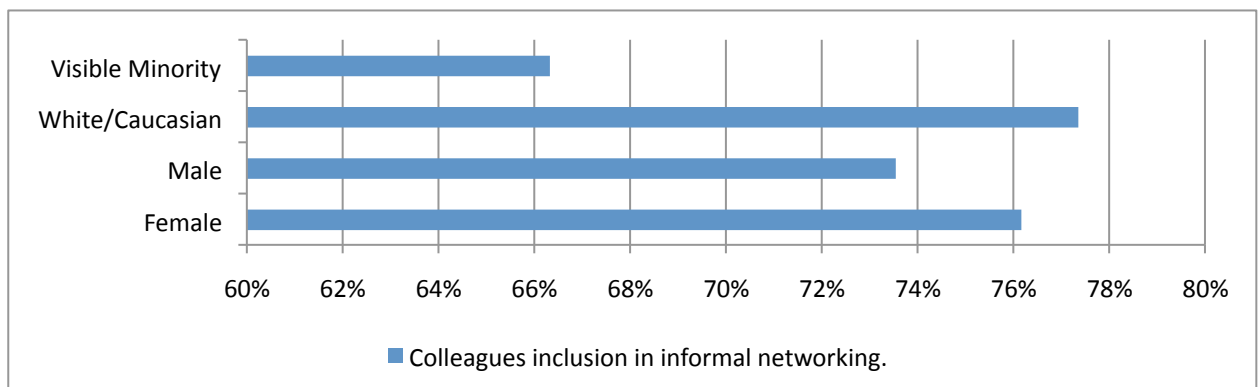


Figure 2. Respondent perceptions of their colleagues inclusion of them in informal networking.

4.4 Career Advancement and Development

When asked to comment on whether they believed “who you know” was more important than “what you know”, a higher percentage of visible minority respondents (70%) compared to white/Caucasian (60%) respondents agreed, in contrast to 63% of females compared to 62% of male respondents. This reveals a significantly larger gap between white/Caucasian and visible minority respondents (10%), than the gap between men and women respondents (1%). Furthermore, an even greater disparity is revealed between white/Caucasian and visible minority responses to the statement that “people tend to recommend people of their own ethnicity for high visibility assignments”, where just less than 1/3rd of the visible minority respondents agreed with the statement, opposed to no more than 1/10th of the white/Caucasian respondents. A greater number of visible minority respondents (45%) believed that they are “held to higher performance standards than their peers”, compared to white/Caucasian (33%) respondents, while there was no difference between the responses of female (36%) versus male (36%) respondents. As can be seen in Figure 3 below, there is a much larger disparity (17%) between visible

minority (54%) and white/Caucasian (37%) respondents in their perception of how few role models there are for them in their organization, than the gap (3%) between male (40%) versus female (43%) respondents.

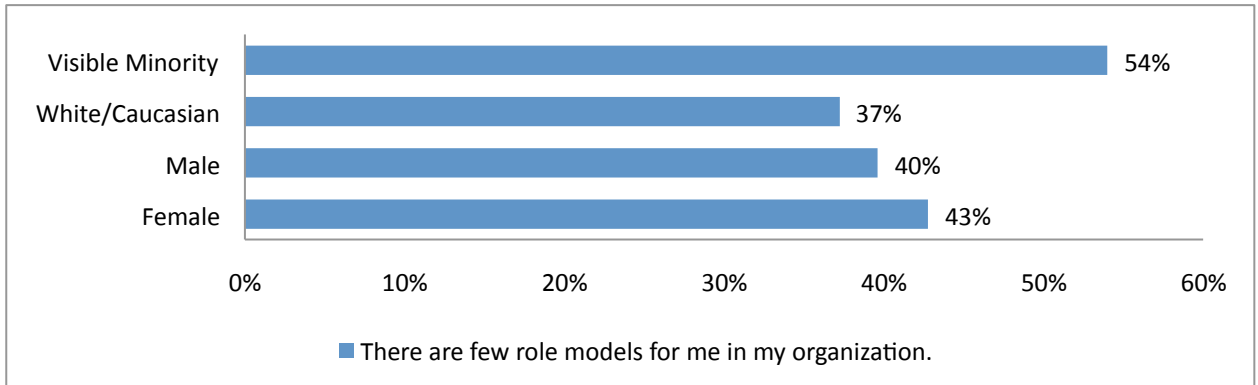


Figure 3. Respondent perceptions of the amount of role models for them in their organization.

4.5 Diversity and Inclusion in the Workplace

Even though there are slight differences in the gaps between male (72%) and female (69%) respondents, and white/Caucasian (72%) versus visible minority (67%) respondents, around two-thirds of all respondents indicated that their organization strives to create a climate supportive of all individuals. Inversely, the gap (11%) between the perceptions of visible minority (18%) and white/Caucasian (7%) respondents that that their organization devotes too little resources to diversity programs, was much larger than the gap (1%) between male (9%) and female (10%) respondents. Visible minority respondents (34%) also agreed to a lesser extent than white/Caucasians (46%) as compared to females (41%) versus males (45%) that their senior management demonstrates a strong commitment to cultural diversity. Of those who indicated whether or not their organization has programs, policies and practices that support the attraction, retention, development, or advancement of visible minorities, 81% of men versus 81% of women (no difference) and 88% of white/Caucasians compared to 59% of visible minorities (29% different) indicated that their organizations had programs, policies and/or practices. Table 2 below presents the statistics of the key questions pertaining to diversity and inclusion in the workplace.

	Female	Male	White/ Caucasian	Visible Minority
My organization strives to create a climate supportive of all individuals.	69%	72%	72%	67%
My organization devotes too little resources to diversity programs.	10%	9%	7%	18%
My senior management demonstrates a strong commitment to cultural diversity.	41%	45%	46%	34%

Table 2. Survey participant responses to diversity and inclusion in the workplace questions.

4.6 Attainment and Recognition of Education Credentials

More than half of the visible minority respondents (63%) had a bachelors degree or higher, while less than half of the white/Caucasian respondents (45%) had a bachelors degree or higher. Furthermore, men (53%) are more likely to have bachelor degrees or higher than women (44%). This uncovers a greater education gap between visible minorities and white/Caucasians (18%) than that realised

between male and female respondents (9%). Table 3 below outlines the breakdown of the levels of education attained by each of the respondent categories under analysis.

	<i>Female</i>	<i>Male</i>	<i>White/ Caucasian</i>	<i>Visible Minority</i>
Less than high school	0%	0%	0%	0%
High school	21%	11%	18%	8%
College certificate/diploma	29%	30%	32%	23%
Bachelor's degree	35%	39%	35%	43%
Masters degree	9%	14%	10%	19%
PhD	0%	0%	0%	1%
Other professional degree/designation	5%	5%	5%	6%

Table 3. Educational attainment of survey respondents.

Of the education earned, only 6% of female and 9% of male respondents earned at least some of their education outside of the United States, Canada, Australia, New Zealand, France, Germany or the United Kingdom, compared to only 2% of white/Caucasian versus 23% of visible minority respondents. Also, 44% of visible minorities compared to 25% of white/Caucasians, and 43% of males compared to 33% of females, believe that their education credentials are recognized as being less than their Canadian equivalent.

Recognition of foreign credentials is one of the biggest barriers identified by respondents in the study, as 31% of respondents felt that their education was being underutilized by their organizations. While the results of the survey show that men to women and white/Caucasian to visible minority responses differ the biggest variance is found in comparing visible minorities to men and women. As this is a survey of professionals who have been in the sector for an average of 10 years, survivor bias is an issue. That is, the respondents are women and visible minorities who have persevered in spite of the barriers that they face.

4.7 Overall Findings

While the survey assessed perceptions, it does suggest significant gaps between the satisfaction and perceptions of fairness in the workplace between visible minority and white Caucasians. Specifically, we found

1. Visible minorities show less organizational commitment than white Caucasian employees in Canadian ICT firms. There is also a gap between male and female respondents but it is smaller and, perhaps unexpectedly, females are more committed than males.
2. Visible minorities show less career satisfaction than white Caucasian employees in Canadian ICT firms. There is also a gap between male and female respondents but it is smaller and women are more satisfied than men.
3. Visible minorities show less favourable perceptions of their relationship with managers and colleagues than white Caucasian employees in Canadian ICT firms. There is also a gap between male and female respondents but it is smaller. Once again females show more favourable perceptions than males.
4. Visible minorities show less favourable perceptions of career advancement and development than white Caucasian employees in Canadian ICT firms believing that its “who you know, not what you know”. There is also a gap between male and female respondents but it is smaller with females more likely to subscribe to this view.
5. Visible minorities show less favourable perceptions of diversity and inclusion practices than white Caucasian employees in Canadian ICT firms. There is also a gap between male and female respondents but it is smaller.

6. Visible minorities perceive that their educational attainment is less valued than white Caucasian employees in Canadian ICT firms. There is also a gap between male and female respondents but it is smaller with females likely to be more satisfied.

The fact is that the gaps between visible minority and white/Caucasian satisfaction, is substantial. What was perhaps most unexpected was that in general female respondents were more likely than males to indicate that they were satisfied. This may suggest that differences in expectations or that the barriers to visible minorities are greater than those faced by women. Of particular note is that the expressed commitment to diversity in many of these organizations, particularly at the senior level, contrasts with the perceptions of many visible minority respondents. Not surprisingly, white Caucasian respondents appear to be less aware of these issues.

4.8 Initiatives to Promote Diversity in the Canadian Workforce

While there is a gap between white/Caucasian and visible minority respondents, employers reported a range of initiatives aimed at supporting full employment of immigrants and visible minorities. As noted above, there are also a plethora of initiatives aimed at attracting and retaining under-represented groups in the industry (ICTC, 2007). Companies are also undertaking targeted outreach to immigrants and visible minorities. For example, Nortel Networks has been a sponsoring company of INROADS, a non-profit organization that aids in the training and development of young people of colour for professional careers in business and industry. It offers multi-year summer internships, year-round coaching, and training activities. In addition to sponsorship fees, corporate sponsors are expected to provide a professional internship opportunity each summer for an intern and to consider hiring the intern for full-time employment upon graduation. Toronto Region Immigrant Employment Council (TRIEC) is a multi-stakeholder council which offers services for skilled immigrants matching them with established professionals in the same field. While the control group (without a mentor) got jobs more quickly, their searches were less focused and the employment they secured was in general labour, assembly, security, data entry and telemarketing earning \$8-22 per hour. In contrast, the mentored group spent more time researching companies and landed more interviews. They earned an average of \$55,000. More than half (55%) of those in a mentoring relationship, found jobs in their field of training through TRIEC's Career Bridge program (TRIEC, 2006).

Once they are recruited, companies have a range of programs aimed at supporting under-represented groups in the workplace. For example, Nortel includes diversity and employment equity compliance training as part of all its management training. Gennum Corporation, a Burlington, Ontario-based medium-sized company in the semiconductor market, reports that approximately 20% of employees have emigrated from other countries. The company offers mentoring programs, language and communications skills programs on site. Celestica has adopted the Electronic Industry Code of Conduct, a voluntary code that commits participants to ensuring that they and their first-tier suppliers do not engage in "discrimination based on race, colour, age, gender, sexual orientation, ethnicity, disability, pregnancy, religion, political affiliation, union membership or marital status."

Finally, and most challenging, are initiatives aimed at shaping societal views. Hireanimmigrant.com for example, is a campaign aimed at challenging assumptions and stereotypes through a provocative series of television advertisements. One for example, features two south Asian men discussing an applicant for a job. "But his degree is from Canada", "His only experience is Canadian", "And then there is his accent", "Why are we even looking at him?" It concludes. The advertisement attempts to confront many of the stereotypes and discriminatory views of Canadians. However, the impact of such social marketing efforts is often uneven. While such campaigns may or may not be effective, there is little doubt that systematic attention to the representations of under-represented groups in the media is critical. Large companies can use their spheres of influence to help shape the media representations of under-represented groups and to use their purchasing power.

Barriers to full participation for under-represented groups can be overcome, and that effective programs share certain characteristics and approaches (Matton & Hernandez, 2004). Specifically,

successful workplace diversity initiatives hinge on committed leadership, defined goals/targets or measures of effectiveness, strong diversity professionals, employee involvement and ties to performance evaluation, as well as data to identify, quantify and communicate progress and challenges. At the same time, organizations operate within a social context. There are broad social and cultural factors, including stereotypes, which shape perceptions and expectations, and which must be addressed. Better data and more research on current practices will help advance our understanding of processes for developing strategies which “fit” in particular contexts. “Best practices” which are innovative, make a difference, have a sustainable effect, and can be replicated and applied in other contexts need to be further explored.

4.9 Implications: Towards an Integrated Approach

Discussions of diversity have proposed conceptual models of change. For example, the notion of the “diversity continuum” (Friday and Friday, 2003, Gilbert, et. al., 1999) is based on the assumption that organizations move through a stages on the path to becoming inclusive. Others have proposed that different sectors and companies within those sectors are at different stages along a “diversity curve” (Cukier et. al., 2007). For example, large telecommunications services tend to be higher up the continuum because they are federally regulated, female dominated, consumer-market oriented, knowledge intensive and relatively profitable. Given the complex and inter-related existence of barriers, we suggest that an ‘ecological’ model of change which considers the complex interactions among individual factors, group factors, organizational factors and societal factors which shape choices, create barriers and facilitate opportunities. The model is adapted from public health (McLeroy et. al., 1988) and proposes complex, iterative, interactions between individuals, groups, organizations, institutions and society. The core belief is that no element exists within a vacuum but is influenced and influences other actors. We propose this model in order to address one of the major gaps which has been identified in the literature to date on diversity – that is the relative lack of research exploring the institutional environment of organizations or the larger socio-political-cultural context of organizations. Efforts must address factors at the individual, organizational and societal levels.

At the individual level, focused programs aimed at equipping members of under-represented groups – with the knowledge, skills and attitudes that will increase their chances of success are essential. Within organizations critical issues include:

- A well defined business case and explicit policy on diversity/employment equity
- Senior executive support;
- Targeted recruitment/retention/promotion programs;
- Open and transparent recruitment and promotion policies
- Employee training and communication;
- Diversity performance objectives and targets ideally tied to compensation;
- Maternity/parental benefits and measures to support work-life balance
- Mentoring, networking and support opportunities;
- Implement supportive work practices and culture (eg. work life balance, mentoring, networking)
- Alignment of management of suppliers/procurement policies
- Systems to track diversity data;
- An accountability framework, eg. Public reporting on diversity issues (Jantzi Research, 2007; Catalyst and the Diversity Institute, 2007; ICTC, 2007)

At the societal level, better policies and programs are needed to support immigrants and other under-represented groups. But more importantly perhaps, vigilance is needed to address the stereotypes and hidden barriers that limit both aspirations and opportunities. Our study suggests that while there is strong evidence to suggest that immigrants and other under-represented groups could help address the ICT skills gap, more work is needed to fully utilize their skills.

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