



OVERCOMING GENDER CHALLENGES IN INFORMATION AND COMMUNICATIONS TECHNOLOGY

A Research Study by AIM

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Abstract

This article investigates women's experiences in information and communications technology (ICT) management. Given concerns about women's underrepresentation in the field of ICT, especially in leadership positions, an examination of the factors that affect women's career advancement is vital. Using data gathered from female and male ICT professionals, this article explores challenges, organizational practices, and strategies for success. The findings highlight several effective approaches and organization policies that have enabled women to get ahead in ICT. Implications for research and practice are discussed.

Introduction

It has been widely reported that women are underrepresented in the field of information and communications technology (ICT). A declining number of women are completing university computing and information technology programs (Department of Education, 2013). Further, women are underrepresented at every career stage in the ICT field, especially in positions of leadership. Women hold less than 10% of management positions in ICT (Dice, 2010). While these statistics are informative, they do not explain or offer effective strategies for altering this pattern.

This article examines the experiences of women and men in leadership positions in ICT. This research draws on previous workplace literature to explore challenges affecting women in ICT. The aim of the research is to increase our understanding of the personal characteristics, effective strategies, and organizations policies that assist women's successful career advancement in the ICT workplace. Interviews were conducted with 69 successful men and women in ICT leadership positions. The findings identify factors that contribute to women's professional success in ICT.

Women in the ICT Field

Despite increases in the number of ICT jobs, interest in these majors and careers has steadily declined in recent years (McGrath Cahoon, 2012). If current trends continue, the ICT field could face a shortage of talent as well as reduced innovation, productivity, and competitiveness (Ashcraft & Blithe, 2010). The declining interest in computing is more significant among women. Despite targeted recruitment programs, the share of women completing ICT-related postsecondary degrees has been in decline. In 2008, women earned 18% of computer and information science bachelor's degrees, down from 37% in 1985 (Ashcraft & Blithe, 2010).

Women are also underrepresented in IT occupations, especially in management positions. Women hold 10% of corporate officer positions and comprise 11% of board of directors in Fortune 500 technology companies (Catalyst, 2008). Women hold approximately 9% of information technology management positions such as CEO, CIO, CTO, VP, director, strategist, manager, and architect (Dice, 2010).

Research has shown that many of the women who enter ICT end up leaving the field, with 80% going into non-technical careers. Studies have suggested that approximately one-third of women with computer science bachelor's degrees were still employed in technical fields two years after graduating (Ashcraft & Blithe, 2010). Further, a study by the Center for Work-Life Policy found that approximately 56% of women in ICT fields leave at the "mid-level" point (Hewlett et al., 2008). Men leave the field at less than half that rate. It is important to note mid-level is a point when the loss of an employees' technical talent is most costly to technology companies.

Challenges in ICT

There are many factors that act as challenges to women's participation, retention, and advancement in the field of ICT. These include inequities in performance and promotion procedures; unconscious bias; inflexible work policies; and a lack of role models and mentors (Ashcraft & Blithe, 2010). Forty-six percent of technical women have reported experiencing gender bias in performance evaluations (Hewlett et al. 2008). An examination of performance evaluations demonstrated that men's accomplishments are far more likely to be attributed to effort and skill, while women's accomplishments are attributed to luck and the ease of the assignment. In addition, many of the characteristics that technical companies and departments require for promotions are stereotypically male (action-oriented, drives results, problem-solver), reinforcing a cycle of male-dominated leadership (Ashcraft & Blithe, 2010). Unconscious bias can act as serious institutional



barrier. Unconscious bias occurs when pre-existing beliefs and attitudes subtly affect behaviors and decisions. Examples of unconscious bias can include microinequities, tokenism, gender/color “blindness,” and isolation. These terms will be explored in more depth below.

Microinequities are subtle messages such as looks, gestures, or tone of voice that are often cumulative. An example of a microinequity would be a manager’s failure to recognize an idea when expressed by one employee, but acknowledging the same idea when another employee voices it.

Gender and color “blindness” involves holding the stance that attributes such as gender and race/ethnicity do not matter, despite the reality that these attributes do matter in the larger society. Women and people of color have experiences that shape their lives differently, leading to differing talents and workplace needs. The result of gender and color “blindness” is often the expectation that all workers fit the mold set by the majority.

Women in the field of ICT often experience isolation. In one study, one-third of women in science, technology, engineering, and mathematics (STEM) position said they felt “extremely” isolated at work (Hewlett et al., 2008). Women in male-dominated fields often receive a lack of appropriate mentorship. They can be excluded from the networks of key decision-makers. Further, they lack a champion or sponsor who is able to make their accomplishments visible. Isolation of this nature in the workplace often results in attrition.

Unconscious biases, such as those discussed above, occur more frequently in workplaces dominated by a single gender or racial/ethnic group. The workplace culture and policies tend to reflect and meet the needs of the majority, while disadvantaging employees from underrepresented groups with differing needs (Ashcraft & Blithe, 2010). Previous research has indicated that

unconscious bias is especially exacerbated in technical companies and departments (Catalyst, 2004). Technical women in these areas are less satisfied with their companies’ approaches to fairness.

Organizational Practices

One of the reasons that women leave the field of ICT is due to a lack of family-friendly work policies. Research has indicated that as they age, women become increasingly aware of the time demands and lack of flexibility in job scheduling in male-dominated fields, resulting in the abandonment of initial career aspirations (Frome, Alfeld, Eccles, & Barber; 2006). Women in ICT have reported experienced significantly more pressure to be available “24/7” when compared to women in other sectors (Hewlett et al., 2008). Women in ICT are less likely to have access to flexible work schedules and face more difficulty in managing the competing responsibilities of work and family care. In addition, mid-level women in ICT are more than twice as likely as their male counterparts to have a partner who works full-time . Because women in dual-career couples assume major responsibilities for their families and households (Newport, 2008), it becomes increasingly difficult for women to balance competing time demands.

Research has suggested that while many companies have adopted formal flexible scheduling policies, managers in male-dominated fields such as ICT often make accessing these schedules difficult (Frome et al., 2006). Those who want to utilize flexible scheduling are seen as the recipient of special treatment and may even face negative consequences in performance evaluations. The difficulty in accessing flexible scheduling can act as a key barrier in women’s retention and advancement in the field of ICT.

Study Methodology

The aim of this research is to increase our understanding of the personal and environmental characteristics that act as a catalyst for women's successful career advancement in technological fields. This is the second part of an ongoing study of women in the ICT workforce. The specific research objectives include:

- investigating common barriers to career success experienced by women in ICT management and executive positions,
- identifying the ways that women in ICT leadership positions have been able to overcome barriers, and
- exploring workplace characteristics that have been helpful or harmful in catalyzing women's advancement in ICT.

Data Collection

The data utilized in this article was collected as part of a multiple-wave investigation. The key means of data generation included interviews with 69 ICT leaders. Additional data was collected during the preparation and presentation of a discussion panel focused on the topic of women in ICT (Thiele et al., 2013). The interview and panel questions were derived from themes identified in the literature, researcher experience, and anecdotal evidence from informal discussions with many women working in the ICT industry. These themes include the culture of ICT, characteristics of the work environment, and the personal characteristics of successful women in ICT.

Research was conducted in the Greater Omaha, Nebraska Metropolitan Area. Including its suburbs, Omaha has an estimated population of 885,624 (U.S. Census Bureau, 2012). It is home to the headquarters of five Fortune 500 companies and four Fortune 100 companies. Omaha has a diverse economy with a focus on skilled knowledge jobs. Primary industries include insurance, telecommunications, banking, and

transportation. Several technology companies have major operations and/or headquarters in the Omaha Metropolitan Area.

AIM collected the first round of data collection, which consisted of semi-structured interviews with ICT professionals (Box et al., 2011). Interviews were conducted via telephone with mid-level and senior-level ICT employees. A list of potential participants was derived from a local database of professionals representing small, medium, and large ICT operations in a variety of industries. This resulted in a list of 46 interviewees. During the interview process, interviewees were asked for referrals, resulting in an additional 23 participants. In total, interviews were completed with 69 mid-level and high-level ICT professionals, forty-three of whom were women and 26 of whom were men. The interview questions are available in Appendices 1 and 2.

AIM collected additional data from these 69 participants via a subsequent questionnaire (Box et al., 2011). The questionnaire gathered additional information pertaining to the characteristics of the interview participants, including basic demographics, educational history, and work experience.

Characteristics of Interview Participants

Interviewees hold a wide range of positions, including IT Manager, Senior Manager for Network Services, Executive Director for Technology, Senior Technical Support Specialist, Vice President of Information Services, Chief Information Officer, and President. Three own their own companies. Participants supervise between zero and 1,700 employees.

One of the objectives of this research was to identify shared characteristics of successful women in ICT leadership positions. During the interviewing phase of data collection, research participants were asked about their early interest in ICT, educational background, and the career pathway that brought them to their current position.

A primary contrast between male and female ICT leaders was an early interest in the field. In the interviews, male and female ICT leaders were asked how they became interested in ICT career paths. Most of the male interviewees described early interest in ICT, even as early as first grade. One male interview participant said, "I always enjoyed solving problems, even as a kid... looking at how you use technology to break down problems and solve them."

Few of the female interviewees had an early interest in the field. Most of these women developed an interest in ICT in college or in their work careers. In addition, several of these women described career trajectories that started in business and progressed to management before laterally transferring into technology departments. One female interview participant admitted that she "fell into [ICT] by accident."

During the interviews, several women wished they had a stronger technical background. A few even felt that their education outside of ICT or business fields did not serve as good preparation for their careers. It is interesting to note that while the women did not have early interest in ICT specifically, several reported early aptitude in math and science.

Characteristics of Discussion Panel Participants

AIM organized a discussion panel on the topic of women in ICT for the 2013 Infotec conference. Discussion panel participants included the high-ranking professionals in technical positions or technical companies, including the VP of IT for a national company, the CEO of an IT solutions company, the CIO of a Fortune 100 company, and the VP of Human Resources of a Fortune 500 company. The panel topics included pathways into ICT and overcoming challenges in the field. Three panel participants were female and the fourth was male.

Research Results

Overcoming Barriers in ICT

One of the key objectives of this research was to investigate how women can overcome barriers in the field of ICT. Although the interviewed women initially downplayed the existence of overt barriers, several discussed subtle disparities. One of these issues was social exclusion. Some of the interviewees reported being excluded from social activities such as golfing, visiting the bar after working, and even eating together at lunch. One woman also reported that her male boss had admitted to excluding her from business trips, an action he felt was a "kindness" because she had children at home and he had presumed she would be opposed to travel.

The majority of the women who were interviewed felt that though barriers might exist in the field of ICT, most felt that these barriers were neither significant nor insurmountable. Some reported missed promotions or income inequalities, but felt it was difficult to determine if these issues were directly tied to their gender. As one woman said, "Nobody comes right out and says, 'it's because you're a woman.'" The discussion panel participants, who did not feel it was useful to unduly focus attention on barriers, echoed this theme.

Although the women interviewed for this study discussed some challenges for women in ICT, most were reluctant to focus on these issues. Instead, many of the women adopted a "true grit" mentality, illuminated as a resolve to succeed despite any gender-based hurdles. As one woman said, "It is helpful to ignore [gender-related challenges] and just do the job."

The interviews also uncovered a common theme of going the extra mile. Several of the women interviewed for this research acknowledged that there are often

"...nobody comes right out and says it's because you're a woman."

disparities in performance evaluations, job assignments, and promotion criteria. In order to pass these hurdles, women felt they needed to work harder and better than their male co-workers did. As one discussion panel participant said, “Women do need to work harder to succeed in technology, but I think it’s getting better than it used to be.” One of the female interviewees said of opportunities, “If I don’t go that extra mile, it’s not going to come to me.”

Organizational Culture

Research participants were asked about their workplace cultures and policies. The results can be organized into three key themes: (1) recognizing gender bias, (2) flexible work arrangements, and (3) mentoring opportunities.

Recognizing Gender Bias

As previously discussed, most of the women interviewed for this research downplayed the existence of gender bias workplaces. There was a common theme around avoiding espousing incidences of gender-related challenges. It is interesting to note that while many the female interviewees initially reported that gender barriers do not exist in their organizations, most of

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these same women went on to describe how they had experienced or witnessed various forms of gender bias. While

the discussion panel participants acknowledged the existence of barriers, they did not see the usefulness in focusing on them. In addition, a few of the women felt strongly that incidences of gender bias were not intentional or personal, but merely an inherent product of the ICT culture.

The men interviewed for this research saw few to no gender barriers. As one noted, “There was a time when women struggled to be taken seriously as a technical person. I don’t see that at all anymore.” Another male ICT leader felt that any challenges were self-imposed by women who thought of themselves as less capable in math and science than their male colleagues. When asked about specific challenges, male interviewees acknowledged that women’s communication styles might make it harder to make their ideas known. One of the male interviewees noted that women bring unique advantages to the workplace, but companies may not utilize these skills effectively.

Flexible Work Arrangements

As one male ICT leader stated, “flexible work arrangements are absolutely needed to support work-life balance.” Some of the most commonly discussed arrangements included flexible scheduling, on-site daycare, sick leave to care for children, job sharing, and teleworking. A female ICT leader said that she has, “tried really hard to ensure that work-life balance gets addressed structurally... that people feel like they can and do have control over their work lives and their personal lives.” One of the discussion panel participants felt that flexible scheduling benefitted both genders and stated, “It’s a no brainer. Companies need to adopt flexible work arrangements, for both men and women.”

Mentoring

When asked about the factors that had aided in their success, interview subjects and discussion panel participants discussed the importance of mentors and role models. Although the interview participants agreed about the importance of mentoring, none were employed in workplaces that had developed formal internal mentoring programs. Instead, most described informal mentoring arrangements, most of which were initiated by the mentee. ICT leaders also discussed the importance of finding role models in the field to whom they could relate.

Some of the ICT leaders admitted that mentoring was not occurring often enough in the field for both male and female ICT employees. As one ICT leader said, “We just don’t do a good job about saying this is something we need to take time to do.” Another noted, “The other thing that I think [ICT leaders] are very poor at – and I think it’s as much women’s fault as anybody’s – is that we don’t spend a lot of time mentoring each other.” Interview participants also discussed that mentoring can be loosely defined to include unspoken mentoring arrangements and role models. One of the interview participants noted that informal relationships could be beneficial in the absence of formal, structured mentorship processes. This interview participant said, “My boss really took me under her wing and was instrumental in my success... but it wasn’t formal; we never called it mentoring.”

The discussion panel participants also discussed the importance of mentoring opportunities. All four participants felt they had benefited from some form of mentoring in their careers. Three of the discussion panel participants also described their recent involvement with a local networking group, Women In Technology in the Heartland (WITH), which connects female ICT professionals with female ICT college students. While these women were interested in helping local college students through mentoring, they also discussed the benefits of developing a strong network with other women in the field of ICT.

Discussion

Overcoming Challenges

The results of this study suggest that many ICT leaders are reluctant to report gender-related challenges in the field. Most of the interviewees – both male and female – claimed to work in a gender-neutral environment. Many women initially reported that gender does not matter and that gendered barriers do not exist in their organizations, only to go on to describe how they experienced various forms of gender

discrimination. None of the interviewees acknowledged this contradiction. Instead, women described their determination to work within this environment and ignore subtle challenges instead of attempting to change organizational culture.

The above situation can be called “gender fatigue,” which occurs when workers lack the energy or desire to tackle workplace issues that they no longer see as an immediate problem (Kelan, 2009a). After waves of feminism, affirmative action, and diversity training, many believe that gender issues at work have already been addressed. Subtle forms of gender discrimination and bias become harder to identify and correct. Even women experiencing gender bias are less likely to call attention to the problem for fear of being labeled a “whiner.” One of the interview participants in the present research study felt it was more beneficial to ignore gender challenges and “just do the job.”

Another theme that emerged from this research was women’s belief that they must do more than is required of men to achieve success in the field of ICT. Several women described differing sets of standards for men and women. Some women felt that they needed to have more experience, a stronger educational background, and better technical understanding and expertise than their male counterparts did. In addition, several women echoed the need to prove themselves and fight for opportunities in the field.

Promoting one’s successes and strengths may mitigate gendered disparities in expectations. It has been suggested that women are more reticent self-promoters than men are (Sandberg, 2012). Often, a fear of backlash may discourage women from self-promoting (Moss-Racusin & Rudman, 2010). However, research has shown that women who were the most proactive in making their achievements visible had greater career growth than women who avoided calling attention to themselves (Catalyst, 2011; Silva & Carter, 2011).

A related strategy can encompass focusing on unique strengths and experiences. Historically, the ICT field has been associated with an emphasis on social and emotional skills (Kelan, 2008). However, as ICT is increasingly integrated with business needs and processes, many jobs require a unique demand for a gendered hybrid worker embodying both “soft” and “hard” skills (Moore, Griffiths, Richardson, & Adam, 2008). Several of the women and many of the men interviewed for the study felt that some of the stereotypically feminine skills translated well into ICT work, especially at the level of management. Additionally, because the ultra-masculine image of computer workers is said to deter women from entering ICT professions (Kelan, 2008), the recent valuation of soft skills and social competence may make ICT a more attractive career option for young women.

Organizational Practices

The results of the interviews highlighted several opportunities for organizations to improve their workplace culture and policies to attract, retain, and grow female ICT leaders. The first of these involves diversity training. An additional strategy is flexible scheduling and teleworking options. A final option involves finding mentors and role models for ICT employees.

In general, the women interviewed for this research were reluctant to identify gender challenges. Most preferred to focus on their own work and advancements instead of attempting to change organization culture or practices. Yet when asked about gender-related challenges, women described various forms of gender discrimination occurring in their workplaces, many of which were subtle or even benevolent. Most of the male interviewees saw few or no barriers to women’s career advancement in IT. There was a common belief among these men that promotion processes are based solely on merit and all employees are treated equally.

The existence of gender bias in the workplace is compounded when there is a systematic effort to ignore or downplay its existence. Subtle forms of gender bias and gender-related challenges can be difficult to identify and especially to address. One option to improve this dynamic is the implementation of organizational diversity training. Diversity training could be used to train staff to recognize and change existing forms of gender bias. In addition, diversity training could also be beneficial in highlighting the unique skills that women can bring to the ICT workplace.

Most of the men and women interviewees supported flexible work arrangements. Some of the most commonly discussed arrangements included flexible scheduling, on-site daycare, sick leave to care for children, job sharing, and teleworking. The adoption of flexible scheduling policies supports women’s retention and advancement in ICT (Frome et al., 2006). In addition to creating these scheduling options, companies could also consider making them easily accessible to employees. Penalizing employees for adopting flexible schedules undermines the benefits of such initiatives.

The women interviewed for this research emphasized the importance of mentoring and role models. Interviewees cited many of the well-known advantages of finding a mentor, including access to an insider’s perspective on navigating career development, and greater networking opportunities. Another key benefit of a mentor is gaining an advocate. Often, promotion of accomplishments is more effective when the praise is coming someone else (Moss-Racusin & Rudman, 2010). Several of interview participants noted that they had actively sought out mentors while they were developing their own careers in ICT.

Conclusion

This research focuses on women's experiences in information and communications technology (ICT) management. Using data gathered from female and male ICT professionals, this article investigated the challenges, organizational practices, and strategies that have affected women's career advancement. One of the key themes that emerged during the data collection phases was ICT professionals' reluctance to identify and discuss gender challenges in the workplace, although many women subsequently described experiencing gender bias. This finding highlights a potential need for more awareness concerning ongoing gender bias in male-dominated fields such as ICT.

The findings of this research identified several effective approaches that have enabled women to get ahead in ICT. Many of the women felt that having pluck, or a "true grit" mentality, was an important factor for success. Instead of attempting to change organizational challenges, many of the successful female ICT leaders focusing on proving themselves and fighting for opportunities. The findings indicated that promoting one's successes and focusing on unique strengths can also diminish some of the gender challenges facing women in ICT. Mentoring and networking were identified as two additional solutions to aid women's career advancement in ICT.

The findings also identified some workplace practices that are conducive to women's retention and advancement in ICT. Flexible work arrangements including scheduling, on-site childcare, job sharing, and teleworking were discussed as organizational policies beneficial to both male and female ICT professionals.

This study identifies several possible lacunas for future research. One of these lacunas involves the need for ongoing, longitudinal research on women in ICT, which would add greater understanding of the changing nature of challenges in the ICT workplace. Another possible research direction would add to Kelan's work (2009) by examining the prevalence of gender fatigue and its effects on organization practices and women's retention. A reluctance to discuss or even identify existing gender bias and challenges results in these problems going unaddressed, which ultimately hurts the retention and advancement of women in ICT.

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