COLLEGE OF COMPUTER STUDIES ALUMNI WOMEN'S PERCEPTIONS OF WORKING IN THE ICT INDUSTRY

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ABSTRACT

The information and communication technology sector are taking on an increasingly significant impact on the global economy. Women are in high demand for highly qualified workers to meet the growing demand of this expanding sector.

The context for this paper is the ongoing under-representation of women from the College of Computer Studies in the ICT industry, as well as the industry's complexities in retaining women, especially at senior levels. Data on the demographic composition of women from College of Computer Studies alumni in the ICT industry are presented. Furthermore, the author focuses on their domestic management and caring responsibilities, as well as the changes in their professional methods that were brought about as a direct consequence of these responsibilities. Given recent government and business discussions over 'work-life balance' and 'flexible working' in the ICT sector, which are partially in response to the need for a more diversified ICT workforce, these facts are highly relevant. In addition to discussing the career histories of female ICT workers, the author investigates their perspectives of compensation and benefits, working conditions, the talents they possess, and the recognition they may or may not receive in their current positions. They provide evidence of a 'long-hours' and 'presenteeism' culture in the ICT business, as well as gendered informal networks inside the industry. Additionally, they analyze the perspectives of female ICT workers about the industry's current and potential future image. The findings emphasize the continuous masculinization of ICT employment, as well as some of the obstacles women encounter while working in statistically and symbolically male-dominated environments.

KEYWORDS: *Women in ICT, Women ICT Careers, Perceptions, ICT Workforce*

INTRODUCTION

This study aims to reassess and broaden the existing understanding of the gap between society perceptions of careers in ICT (Information, Communication, and Technology) and the real-world experiences of women working in this field. A significant number of students, particularly females, do not consider ICT as a feasible professional option. Prevailing beliefs suggest that a career in information technology lacks excitement and lacks opportunities for interpersonal engagement (Cockburn 1991; Jewell & Maltby 2001; Margolis & Fisher 2002; MMV 2004). Also, in the perspectives of secondary school female students, the survey results demonstrated that, on average, female students had good impressions of ICT; nevertheless, this interest did not convert into consideration of ICT as a career choice. This shows that there is a huge population of female students who might be interested in ICT studies and jobs if they were encouraged and given more knowledge about the opportunities that ICT provides. The findings of statistical modeling revealed that, in addition to factors such as computer interest and family background, exposure to various software tools and services, particularly in the early years of secondary school, played a significant role in shaping female students' interest in an ICT career (Miliszewska & Sztendur 2010).

Nonetheless, studies (Trauth 2002; Beekhuyzen, Nielsen, & Von Hellens 2003) have shown that many women who work in ICT say that their jobs are interesting, challenging, and fun. Apart from this, a high portion of the Palestinian women who responded felt that learning the fundamental skills of ICT gave them some measure of empowerment and confidence and thought that ICT was useful in enhancing their standard of living (Rabayah 2010). The comprehensive and balanced participation of women in ICT-based economic and educational activities encourages their contributions in business and at home, as well as their empowerment. When utilized efficiently, ICT can enhance women's opportunities to exchange information, gain access to online education, and engage in e-commerce activities, thereby improving their quality of life (Matangi, Kashora, Mhlanga, & Kachere 2013).

A more recent study (Courtney, Lankshear, Anderson, & Timms 2009) revealed that the unfavorable stereotype associated with ICT professions in Australian society is "corrigible," which means that it can be improved. Nevertheless, as the end of the first decade of the twenty-first century approaches, the field of information and communication technology (ICT) continues to lack appeal and attractiveness among women (Lang 2007). The proportion of women with equal representation in the field of ICT is either unchanged or declining (MMV 2008), implying that the stereotype of an uninteresting and non-human interface work perhaps is not changing at all. Moreover, women are more likely to be in roles requiring less well-paid "soft" skills, which

has been linked to gender occupational segregation in the tech industry. As these skills are assumed to be female, this can lead to women being pushed into or trapped in these roles (Graham 2016). Similarly, data on the completion of the Victorian Secondary School Certificate of Education show that students, regardless of gender, are increasingly opting out of IT modules in their final years of school. In 2001, a total of 16,229 units were completed, with female students accounting for 42% of the total. The number of students that graduated in 2009 was 5199, with just 19% of those students were female (VCAA, 2010). Moreover, despite being regular leisure users of ICT tools, few females are currently entering the ICT field, which represents a loss of talent for the industry and a loss of opportunity for women (Gras-Velazquez, Joyce & Debry 2009). Conversely, a very significant finding is that women who have better access to ICT resources appear to be more inclined to look for training. This is demonstrated by the fact that a similar proportion of women—73% overall—had formed particular thoughts about what they may benefit from taking a course in computers that would improve their ICT abilities (Rabayah 2008).

There is compelling evidence to suggest that more women are needed at all areas of the ICT profession. It has been proposed that there is a need for a greater number of women "out of self-interest" (Klawe, Whitney & Simard 2009 p.68). Design and development teams that are diverse generally provide "enhanced abilities to perform tasks, greater creativity, and better decisions and outcomes" for all members of the team (Klawe, et al. 2009 p.68). Women believed their wages were comparable to those of their male co-workers because they saw their gendered roles as being extremely significant and essential to ICT. To attract and keep women in an industry where a skills shortage is anticipated in the coming years, it will be helpful to have a better handle on how they feel about their ICT profession (Crump, Logan & Mcllroy 2007). In addition, the existing literature highlights various instances of design and system failures, with a significant portion being attributed to the absence of diversity within development teams (Margolis & Fisher, 2002). Women are more likely than men to lack basic literacy and computer skills, making them less likely to take advantage of the opportunities provided by ICTs. Women account for nearly two-thirds of the world's illiterate population, with one in every two women in developing countries being illiterate (Vodanovich, Urquhart, & Shakir 2010). Furthermore, it has been recognized that the lack of women in this profession represents a non-measurable disadvantage. Therefore, they are unaware of the potential outcomes and opportunities they are missing (Lang et al., 2010; NCWIT, 2007). Similarly, the business justification for encouraging diversity within sectors and on boards to avoid "groupthink" is as relevant in the ICT industry as it is in any other profession. According to recent research, "the mere presence of socially distinct newcomers, and the social concerns that their presence elicits in long-term residents, motivates behavior that can transform emotional discomfort into cognitive benefits" (Phillips, Lilijenquist, & Neale, 2009, p. 1).

The range of professions contained within this sector appears as a critical issue when seeking to explain the difference between beliefs and realities in ICT careers. The word ICT itself is defined as having "a lack of clarity of definition" (Webb & Young, 2005, p. 148), and defining which occupations belong under the ambit of ICT is also difficult (DCITA, 2006). The rapid speed of technological innovation complicates precise conception of the computing business (Beekhuyzen, Nielsen, & Von Hellens, 2003; Valenduc et al., 2004), making it a nontrivial semantics exercise (Spencer, 2003). Computer science, information systems, systems engineering, and other terms are frequently used, with ICT and IT now being the "buzz" phrases. Each of these terminologies has a specific meaning that is difficult to define precisely.

ICT encompasses a broad range of employment roles that include both technical and non-technical aspects. While secondary students may have a clear understanding of the responsibilities of a nurse, teacher, or architect, the same level of clarity is often lacking when it comes to the ICT field. Consequently, in the presence of such uncertainty, many individuals' defaults to a simplified definition of ICT as "something related to computers." This assumption leads them to believe that ICT is predominantly technical, likely involving programming, and consequently perceived as a solitary endeavor.

Taking these aspects into account, the research questions we attempted to answer included: What factors have drawn women who are currently employed in the ICT industry? And what insights can we derive from their experiences to enhance the societal perception of ICT as a viable career choice? By obtaining answers to these questions, we anticipate gaining valuable knowledge that can aid in tackling misconceptions and stereotypes linked to the profession.

OBJECTIVES OF THE STUDY

The purpose of this study is to assess women ICT professionals' perception in working College of Computer Studies Alumni in ICT Industry on the reasons why they chose the ICT industry as a career path, characteristics that may be associated with ICT as a career for women, and masculine and feminine behaviors in the workplace and the ICT Industry.

METHODOLOGY

A descriptive quantitative study was carried out with 82 women alumni of the College of Computer Studies who were working in ICT fields. In order to obtain thorough descriptions, the interviews and brainstorming session were directed by a list of essential questions compiled from the literature, including earlier studies by Nielsen et al. 2003 & Trauth 2002. Participants were encouraged to comment about their thoughts, experiences, and job relationships without following a predetermined script throughout the interview. Throughout 2022, surveys were performed via Facebook Messenger as well as in person. The survey asked the women to explain their marital status, age, course, greatest educational level, and whether they were the family's sole earner. They were asked what led them to a profession in ICT and to weigh in on the benefits and drawbacks of working in this field. If they had not already been asked, the women were asked if the gender gap in their industry affected their professional lives.

Of the 82 women surveyed, 10 were married and 72 are single. Their courses were varied including Bachelor of Science in Information Technology and Bachelor of Science in Computer Science. The interviewees came from the College of Computer Studies Alumni who are working in ICT Industry.

RESULTS AND DISCUSSION

The figure presented in the survey results focusing on the criteria such as reasons why they chose the ICT industry as their career path, the qualities that may be attributed to ICT as a career for women, and masculine and feminine behaviours in the workplace and the ICT Industry. The latter figure represents the open-ended question responses that characterize women ICT Professionals' perception in working in ICT Industry.

Table 1.1 Results on reasons why they chose ICT industry as their career path

	In terms of Image (Criteria)	MEAN	SD	Adjectival Rating
B1	ICT has a good image in the community	4.44	0.52	Strongly Agree
B2	ICT provides job security	4.46	0.53	Strongly Agree
B3	ICT is considered to be of "high status"	4.37	0.58	Strongly Agree
B4	ICT is associated with high salaries	4.37	0.58	Strongly Agree
B5	ICT provides opportunities from promotions or career advancement	4.48	0.50	Strongly Agree
	Total	**4.42**	**0.54**	**Strongly Agree**

Table 1.1 shows that the mean response of 82 CCS alumni women regarding reason why they chose ICT industry as their career path in terms of image, it shows that the item B5: which pertains to the statement. *"ICT provides opportunities from promotions or career advancement"* garnered the highest mean of 4.48 and a standard deviation of 0.50 which interpreted as strongly agree and preceded by the 2nd highest mean of 4.46 B2: *"ICT provides job security"* which can be interpreted also as strongly agree. The overall mean of this table garnered a 4.42 and an overall standard deviation of 0.54 which interpreted as strongly agree.

Table 1.2 Results on reasons why they chose ICT industry as their career path

	In terms of Job Satisfaction (Criteria)	MEAN	SD	Adjectival Rating
B6	ICT provides interesting work	4.56	0.50	Strongly Agree
B7	ICT provides challenging work	4.45	0.50	Strongly Agree
B8	ICT encourages creativity	4.48	0.50	Strongly Agree
B9	ICT provides work satisfaction	4.49	0.50	Strongly Agree
B10	ICT provides opportunities for promotions or career advancement	4.55	0.50	Strongly Agree
	Total	**4.51**	**0.50**	**Strongly Agree**

Table 1.2 shows that the mean responses of 82 CCS alumni women regarding reason why they chose ICT industry as their career path in terms of job satisfaction, it shows that the item B6: which pertains to the statement. *"ICT provides interesting works"* garnered the highest mean of 4.56 and a standard deviation of 0.50 which interpreted as strongly agree and preceded by the 2nd highest mean of 4.55 B10: *"ICT provides opportunities for promotions or career advancement"* which interpreted as strongly agree. The overall mean of this table garnered a 4.51 and an overall standard deviation of 0.50 which interpreted as strongly agree.

Table 1.3 Results on reasons why they chose ICT industry as their career path

	In terms of Social Usefulness (Criteria)	MEAN	SD	Adjectival Rating
B11	ICT provides a social useful job	4.55	0.50	Strongly Agree
B12	ICT provides a responsible job	4.46	0.50	Strongly Agree
B13	ICT provides opportunities to work with others	4.56	0.50	Strongly Agree
	Total	**4.52**	**0.50**	**Strongly Agree**

Table 1.3 shows that the mean responses of 82 CCS alumni women regarding reason why they chose ICT industry as their career path in terms of social usefulness, it shows that the item B13: which pertains to the statement. *"ICT opportunities to work with others"* garnered the highest mean of 4.56 and a standard deviation of 0.50 which interpreted as strongly agree and preceded by the 2nd highest mean of 4.73 B11: *"ICT provides a social useful job"* which interpreted as strongly agree. The overall mean of this table garnered a 4.52 and an overall standard deviation of 0.50 which interpreted as strongly agree.

Table 1.4 Results on reasons why they chose ICT industry as their career path

	In terms of Flexibility (Criteria)	MEAN	SD	Adjectival Rating
B14	ICT provides self-employment opportunities	4.51	0.55	Strongly Agree
B15	ICT provides flexible working hours	4.10	0.76	Strongly Agree
B16	ICT provides travel opportunities	4.44	0.52	Strongly Agree
B17	ICT provides the ability to work from home	4.50	0.50	Strongly Agree
B18	ICT encourages independent work	4.49	0.50	Strongly Agree
	Total	**4.41**	**0.57**	**Strongly Agree**

Table 1.4 shows that the mean responses of 82 CCS alumni women regarding reason why they chose ICT industry as their career path in terms of flexibility, it shows that the item B14: which pertains to the statement. *"ICT provides self-employment opportunities"* garnered the highest mean of 4.51 and a standard deviation of 0.55 which interpreted as strongly agree and preceded by the 2nd highest mean of 4.50 B17: *"ICT provides the ability to work from home"* which interpreted as strongly agree. The overall mean of this table garnered a 4.41 and an overall standard deviation of 0.57 which interpreted as strongly agree.

Table 2.1 Results regarding the qualities that may be attributed to ICT as a career for women

	In terms of Reward (Criteria)	MEAN	SD	Adjectival Rating
C1	People respect me	4.48	0.55	Strongly Agree
C2	The pay is good	4.27	0.65	Strongly Agree
C3	ICT provides opportunities to meet lots of people	4.52	0.50	Strongly Agree
	Total	**4.42**	**0.57**	**Strongly Agree**

Table 2.1 shows that the mean responses of 82 CCS alumni women regarding the qualities that may be attributed to ICT as a career for women in terms of reward, it shows that the item C3: which pertains to the statement. *"ICT provides opportunities to meet lots of people"* garnered the highest mean of 4.52 and a standard deviation of 0.50 which interpreted as strongly agree and preceded by the 2nd highest mean of 4.48 C1: *"People respect me"* which interpreted as strongly agree. The overall mean of this table garnered a 4.42 and an overall standard deviation of 0.57 which interpreted as strongly agree.

Table 2.2 Results regarding the qualities that may be attributed to ICT as a career for women

	In terms of Opportunities (Criteria)	MEAN	SD	Adjectival Rating
C4	There are lots of job opportunities in ICT	4.60	0.49	Strongly Agree
C5	There is a wide variety of ICT careers to choose from	4.51	0.50	Strongly Agree
C6	Specializing in ICT open doors to career in many types of industries or businesses	4.54	0.50	Strongly Agree
	Total	**4.55**	**0.50**	**Strongly Agree**

Table 2.2 shows that the mean responses 82 CCS alumni women regarding the qualities that may be attributed to ICT as a career for women in terms of opportunities, it shows that the item C4: which pertains to the statement. *"There are lots of job opportunities in ICT"* garnered the highest mean of 4.60 and a standard deviation of 0.49 which interpreted as strongly agree and preceded by the 2nd highest mean of 4.54 C6: *"Specializing in ICT open doors to career in many types of industries or businesses"* which interpreted as strongly agree. The overall mean of this table garnered a 4.55 and an overall standard deviation of 0.50 which interpreted as strongly agree.

Table 2.3 Results regarding the qualities that may be attributed to ICT as a career for women

	In terms of Helping the Society (Criteria)	MEAN	SD	Adjectival Rating
C7	ICT provides opportunities to help others	4.61	0.49	Strongly Agree
C8	Women customers are relieved to deal with a women regard to ICT problems	4.32	0.58	Strongly Agree
C9	ICT stimulates imagination and creativity	4.52	0.50	Strongly Agree
C10	ICT is flexible and it is possible to work from home	4.55	0.52	Strongly Agree
	Total	**4.50**	**0.52**	**Strongly Agree**

Table 2.3 shows that the mean responses of 82 CCS alumni women regarding the qualities that may be attributed to ICT as a career for women in terms of helping the society, it shows that the item C7: which pertains to the statement. *"ICT provides opportunities to help others"* garnered the highest mean of 4.61 and a standard deviation of 0.49 which interpreted as strongly agree and preceded by the 2nd highest mean of 4.55 C10: *"ICT is flexible and it is possible to work from home"* which interpreted as strongly agree. The overall mean of this

table garnered a 4.50 and an overall standard deviation of 0.52 which interpreted as strongly agree.

Table 2.4 Results regarding the qualities that may be attributed to ICT as a career for women

	In terms of Stereotypes (Criteria)	MEAN	SD	Adjectival Rating
C11	An ICT career means sitting in front of a computer all day	1.34	0.67	Strongly Disagree
C12	An ICT career is boring	1.28	0.45	Strongly Disagree
C13	Only computer "geeks" or "nerds" work in ICT	1.22	0.42	Strongly Disagree
	Total	**1.29**	**0.51**	**Strongly Disagree**

Table 2.4 shows that the mean responses of 82 CCS alumni women regarding the qualities that may be attributed to ICT as a career for women in terms of stereotypes, it shows that the item C11: which pertains to the statement. *"An ICT career means sitting in front of a computer all day"* garnered the highest mean of 1.34 and a standard deviation of 0.67 which interpreted as strongly disagree and preceded by the 2nd highest mean of 1.28 C12: *"An ICT career is boring"* which interpreted as strongly disagree. The overall mean of this table garnered a 1.29 and an overall standard deviation of 0.51 which interpreted as strongly disagree.

Table 3.1 Results regarding to masculine and feminine behaviours in the workplace and the ICT Industry

	In terms of Equality (Criteria)	MEAN	SD	Adjectival Rating
D1	In my workplace, I feel I receive the same recognition for my work as my male colleagues	4.65	0.51	Strongly Agree
D2	The ICT industry has a female-friendly image	4.39	0.54	Strongly Agree
D3	In my workplace, I feel that I have as much chance of promotion as my male colleagues	4.50	0.61	Strongly Agree
D4	In my workplace, I feel confident of my technical abilities	4.48	0.53	Strongly Agree
D5	I would encourage young women/girls to enter the ICT industry	4.57	0.50	Strongly Agree
	Total	**4.52**	**0.54**	**Strongly Agree**

Table 3.1 shows that the mean responses of 82 CCS alumni women regarding to masculine and feminine behaviours in the workplace and the ICT Industry in terms of equality, it shows that the item D1: which pertains to the statement. *"In my workplace, I feel confident of my technical abilities"* garnered the highest mean of 4.65 and a standard deviation of 0.51 which interpreted as strongly agree and preceded by the 2nd highest mean of 4.57 D5: *"I would encourage young women/girls to enter the ICT industry"* which interpreted as strongly agree. The overall mean of this table garnered a 4.52 and an overall standard deviation of 0.54 which interpreted as strongly agree.

Table 3.2 Results to masculine and feminine behaviours in the workplace and the ICT Industry

	In terms of Management Approachability (Criteria)	MEAN	SD	Adjectival Rating
D6	In my workplace, I feel or felt able to rise my concerns about how I have been treated	4.13	0.77	Agree
D7	In my workplace, I feel or felt able to rise my concerns about the treatment of other employees	4.11	0.80	Agree
	Total	**4.12**	**0.76**	**Agree**

Table 3.2 shows that the mean response of 82 CCS alumni women regarding to masculine and feminine behaviours in the workplace and the ICT Industry in terms of management approachability, it shows that the item D6: which pertains to the statement. *"In my workplace, I feel or felt able to rise my concerns about how I have been treated"* garnered the highest mean of 4.13 and a standard deviation of 0.77 which interpreted as agree and preceded by the 2nd highest mean of 4.11 D7: *"In my workplace, I feel or felt able to rise my concerns about the treatment of other employees"* which interpreted as agree. The overall mean of this table garnered a 4.12 and an overall standard deviation of 0.76 which interpreted as agree.

As a corollary, the tables above reveal a constant favorable survey results that alumni women are currently adequate in their workplace in the ICT industry. It also implies that women working in the ICT industry contribute distinct insights that may help drive innovation and creativity, and that a better representation can be beneficial in terms of creating a more inclusive and welcoming industry culture, as well as reducing unconscious prejudices that can adversely impact women.

CONCLUSION

One takeaway from the research, which is consistent with prior findings, is that a job in ICT is "challenging, exciting, rewarding, and compelling" (Courtney et al. 2009, p.60). The dichotomy that exists between what school students and other members of society perceive of an ICT career involves and the actual work experience of women in ICT is maintained. According to the women that were interviewed, a career in ICT contradicts the limited conceptions of secondary school students mentioned in the introduction.

However, the researcher discovered that there was insufficient data to support earlier claims that women in ICT were subjected to different standards. It was found that only one of the participants mentioned the struggle to gain technical credibility, which suggests that the workplace was changing. The findings from the interviews have prompted some further inquiries. Have the women interviewed accepted and adapted to a male-dominated ICT industry, or has the workplace evolved as a result of the varying definitions of what an ICT career is? The researcher unequivocally discovered a more favorable environment in terms of diversity, acceptance, and inclusion; nevertheless, before any further conclusions can be drawn, more comprehensive research including a bigger number of participants is need to be carried out.

Students are generally uninformed of the realities of ICT job chances. Several of the CCS alumni women contacted for this study stressed this lack of understanding, and it pervades their "journeys" to ICT employment. Rather than making a deliberate decision to pursue a career in information technology, the majority of women mentioned a series of events and work opportunities that presented themselves, as well as taking advantage of a series of "chance" offers or a fortuitous incident that led to their current position. Several respondents said that they were uninformed of the existence of such positions at the time, and that specific job titles arose later. As a result, the difficulties of defining a constantly changing and evolving territory are highlighted. Ignorance and a general lack of awareness of the variety of ICT careers appear to be a hindrance to achieving greater gender equality in the area. Some respondents claimed that they are still unable to convey their concerns to senior management, and if this situation continues, some issues may go unreported or lead to misunderstandings. Since technology has permeated modern life, there is a strong sense of contradiction, as it remains difficult to identify and appropriately describe its professional identity to younger generations considering future career pathways.

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