

## **The Career Stage Effect on Women in ICT: An Overview of the ACS-W Survey**

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### ***Synopsis***

This paper presents an analysis of challenges and issues women in the Australian ICT industry face in relation to their age, their life stage, and their career stage. The paper commences with an overview of the findings of a survey conducted by the Women's Board of the Australian Computer Society (ACS). The survey was conducted in 2007 in response to a perceived lack of data about the actual needs, experiences and challenges of women in the Australian sector. The paper then provides a comparative analysis of three cohorts of survey respondents. The cohorts include women under the age of 35; women between the ages of 35 and 49 and women over the age of 50. A comparative analysis of the respondents qualifications, employment status, salary range, years in ICT, hours worked and perceived career issues is followed by a summary of the findings using the voices of the respondents themselves. The paper concludes with an overview of the career stages of women in the ICT sector.

***Key Words:*** Women, Information Communication Technology, career stage, career lifecycle.

## **Introduction**

According to the 2008 Australian Computer Society (ACS) *ICT Industry Report*, in January 2008 there were an estimated 79 000 women employed in the Information Communication Technology (ICT) industry in Australia, with almost half working in the software and services sector (2008a). Within the ICT sector, women account for just under 30 per cent of the total workforce. Female participation rates in ICT roles are around 21 per cent at the professional level, 18 per cent when electronics and communications workers are included, and the rate drops to 15 per cent when all the relevant trades assistants are included. According to the Australian Bureau of Statistics (ABS) female participation in the ICT workforce has changed little over time:

*The proportion of ICT workers that are female has remained relatively steady at around 16% over the past six years (ABS, 2005)*

A review of the available literature suggests that the gender imbalance that occurs in the ICT sector, both in Australia and internationally is well documented (Bandias & Warne, 2009; M Griffiths, Moore, & Richardson, 2007; Hafkin.N, 2007; Hellens & Nielsen, 2001). Whilst the under-representation of women in the ICT sector is not a new phenomenon, little is known about the challenges these women experience in the workplace in relation to their career stage, their age and their stage of life.

The perceived lack of data about the actual needs, experiences and challenges of women in the Australian sector prompted the ACS Women's Board (ACS-W) to undertake a survey of all female members of the ACS (ACS, 2008b). The survey was conducted in June 2008. The Australia-wide online survey sought to obtain both quantitative and qualitative data concerning the career experience of women engaged in the ICT sector. The survey incorporated questions concerning the demographics, age, experience and qualifications of respondents. Respondents were also asked to identify the factors that had an adverse impact on their career, the challenges they faced as well as their current professional needs.

This paper provides a review of the relevant literature, an outline of the methodology and an overview of the results of the survey. The paper then provides a comparative analysis of three cohorts of survey respondents. The cohorts include women under the age of 35; women between the ages of 35 and 49 and women over the age of 50. A comparative analysis of the respondents qualifications, employment status, salary range, years in ICT, hours worked and perceived career issues is followed by a summary of the findings using the voices of the respondents themselves. The paper concludes with an overview of the career stages of women in the ICT sector.

## **Background**

The relationship between life span and career development was first articulated in 1957. Super, a Counselling Psychologist, theorised that career development takes place across one's entire life-span and can be divided into stages or maxi-cycles (1957). Super (1957, 1980, 1990), and Levinson's (1978, 1986) subsequent work in this area has had a significant influence across a wide range of disciplines including Management, Organisational Behaviour, Career Counselling, Human Resources and Psychology. It is now widely acknowledged that the employment opportunities and choices people make varies through their life cycle (ABS, 2006; Chi-Ching, 1995;

Elder, 1975; Kalleberg & Loscocco, 1983). Consequently, the career stage effect on job satisfaction, employment mobility and career choices has been well researched and documented (Cooke, 1994; Lee & Wilbur, 1985; Mount, 1984; Pang & Lee, 2002; Suzyn & Lynn, 1990).

In the Australian context, the literature in regard to career stages is well established in a number of diverse areas. Smart et al have explored the career development stages of men and women contemplating a second career (1997); Hess et al have explored ‘...individuals’ perceptions of the psychological contract based on their generational cohort and career stage...’ (2008:1); Pillay et al, have researched the career aspirations of older workers (2006) and Lynn et al have ‘...compared work commitments, overall job satisfaction, intrinsic and extrinsic rewards satisfaction, and organizational and professional turnover intentions of ... accounting professionals at different career stages’ (1996:135). Although Smart (1997) has researched the varying differences in Australian professional women’s attitudes toward work across the career life cycle, the literature in regard to career cycle and life cycle nexus of Australian working women remains largely under developed.

The literature review also revealed that there is currently no research that examines the career stages of women in the Australian ICT sector. There is also a significant gap in the international literature in regard to this topic. Only recently has Griffith et al explored the career, the caring responsibilities and the “...the nuances of experiences...” of various age groups of female ICT professionals in the United Kingdom (2006:153).

Whilst is well documented that women are under-represented in the ICT workplace, research also indicates that gender differences impact on the career success of women in the sector (Igbaria & Chidambaram, 1997). It is also acknowledged that the career path for women is, for a variety of reasons, often interrupted (Cabrera, 2007); and for women, job satisfaction, career commitment and involvement varies according to career stage (Smart, 1997). These experiences are exacerbated when are women employed in predominately male dominated areas. However, as the literature search revealed, little is known of the career-life cycle nexus of women employed in the ICT sector. Even less is known of ‘...the nuances of [their Australian] experience...’ Consequently, research into the challenges and issues women in the Australian ICT industry face in relation to their age, their life stage, and their career stage is clearly warranted.

## ***Methodology***

Given the large population that was to be surveyed, a web survey was considered to be the best methodology to use for data gathering. Whilst the use of online survey research is considered to be ‘...young and still evolving’ (Wright, 2005:1), the advantages and disadvantages of employing an online survey methodology are well documented (Andrews, Nonnecke, & Preece, 2003; Birnbaum, 2004; Couper, 2000; Kaye & Johnson, 1999; Wright, 2005).

Research by Wright indicates that the advantages of online surveys include “...access to individuals in distant locations, the ability to reach difficult to contact participants, and the convenience of having automated data collection, which reduces researcher time and effort.”(2005:1). However, as Andrews et al noted, “Using the Internet to

conduct quantitative research presents challenges not found in conventional research.” (2003:185). According to Andrews:

*Electronic surveys have distinctive technological, demographic, and response characteristics that affect their design, use, and implementation. Survey design, participant privacy and confidentiality, sampling and subject solicitation, distribution methods and response rates, and survey piloting are critical methodological components...* (2003:185)

The survey underwent a hard copy and an online trial before it was made available to prospective respondents. The hard copy trial assisted in identifying typing and spelling errors, duplicated questions and tested the internal reliability and validity of the survey. An online pre-test of the survey enabled formatting errors to be corrected and ensured that the questions were presented in a logical and comprehensible manner.

The online pre-test also enabled the survey authors to fully exploit design options such as links, defaults and menus that are available in the online environment. As Andrews et al commented, “The Web-based survey designer has a wide range of textual options, format control and graphics sophistication not attainable with [other] surveys...”(2003:4). However, the authors concur with Andrews in that, “Web-based surveys are more challenging to design and more technically difficult to implement because of these options”(2003:4).

In order to maximise the survey response rate, respondents were offered an incentive to complete the survey. According to a number of sources the use of incentives can have a significant effect on a survey response rate (Kessler, Little, & Groves, 1995; Yammarin, Skinner, & Childers, 1991). Research by Yammarin indicates that, on average, the use of incentives increases a survey response rate by 6.5 per cent. According to Yammarin, “Repeated contact in the form of preliminary notification and follow-ups, appeals...[ are also] effective in increasing survey response rates” (Yammarin, et al., 1991:631).

The incentive, a bouquet of flowers delivered to an address nominated by the survey respondent, was specifically chosen because of its potential appeal to women. The incentive was offered to the first 20 survey respondents and the last 10 survey respondents. The inclusion of the latter incentive was designed to encourage laggards to complete the survey. All respondents had the opportunity to opt in or out of the incentive offer.

The survey authors, mindful of the privacy issues surrounding data collection methods took precautions to ensure that the survey respondents remained anonymous. However, the use of an online survey compounded the issues of data confidentiality, privacy and anonymity. As Cho et al has acknowledged:

*Online surveyors commit multiple violations of physical, informational, and psychological privacy that can be more intense than those found in conventional survey methods. Internet surveys also invade the interactional privacy of online communities, a form of privacy invasion seldom encountered with traditional survey methods.* (1999:421)

In order to minimise any privacy issues that may have arisen, to preserve the integrity of the survey and to mitigate the concerns of respondents, personal data such as

names and contact details were disaggregated from the survey data and stored separately.

The survey was uploaded onto the ACS website for members to complete between the 14 May - 3 June 2008. The survey consisted of 35 questions that explored members' demographics, qualifications, ACS membership, remuneration, time spent and roles in the ICT industry. The survey also asked participants to identify the factors that influenced their career choices. The questions were both quantitative and qualitative in nature and were designed to obtain statistical as well as descriptive responses. The women were asked to describe the challenges they face in the industry and to suggest the type of support ACS could provide to address these challenges.

Potential survey respondents were contacted, via email prior to the release of the survey. This initial contact was to alert potential respondents to the survey and to stimulate their interest. All female members of the ACS were subsequently contact three times, by email, whilst the survey was live. This follow up contact was initiated in order to maximise the response rate.

Six hundred and seventy eight women completed the survey. This response rate represented 28 per cent of the female ACS membership. A review of the respondent's demographic data, age and job role indicated that the respondents were representative of the female membership of the ACS. The high response rate was also indicative of the survey's external validity (Cook, Heath, & Thompson, 2000).

### ***The Ages and Career Stage of Women in ICT***

In order to examine the career stages of women engaged in the ICT sector the survey respondents were separated into three cohorts. The cohorts were based upon age. The first cohort consisted of women less than 35 years of age, the second cohort included women aged between 35 and 49. Women more than 49 years of age constituted the third cohort. Almost 33 per cent were aged less than 35, approximately 40 per cent of respondents were between 35 and 49 years of age and almost 27 per cent were over the age of 49.

These age ranges were chosen as they represented the life stages of early, middle and mature adulthood. These cohorts also broadly correspond with of the establishment, growth and maintenance and career stages identified by Levinson (1986).

### **Comparison of Qualifications**

An analysis of the qualifications held by the three respondent cohorts revealed that the level of formal qualification varied according to age and subsequent career stage. As illustrated in Figure 1, more than 47 per cent of respondents under the age of 35 had an Undergraduate qualification, approximately 9.5 per cent of this cohort had a Post Graduate degree and 31 percent had a Masters. Less than 1 per cent had a Doctoral qualification and 7.5 per cent had a Diploma or a Certificate.

Approximately 36 per cent of respondents in the 35 to 50 age group held an Under Graduate qualification, 31 percent had a Masters, 17 percent had a Post Graduate qualification and 3 percent held a Doctorate. The remaining 12 per cent had a Diploma or a Certificate.

The respondents aged 50 years or older were the most well-qualified. Almost 17 per cent held a Doctoral qualification, 22 per cent had a Masters, 24 per cent had a Post Graduate Degree and 24 per cent had an Under Graduate qualification. The remaining 13 per cent had a Diploma or a Certificate

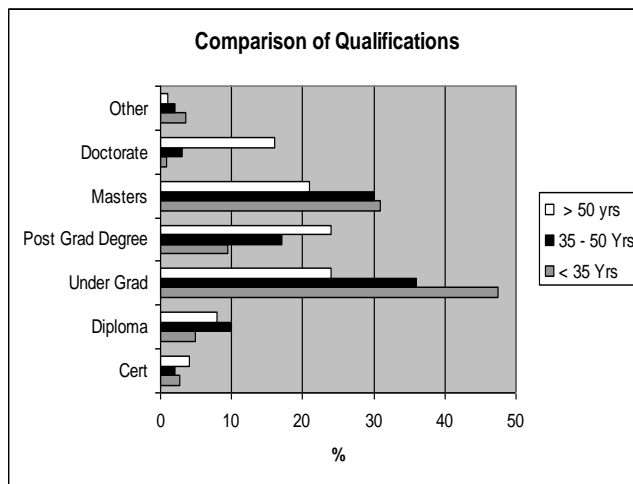


Figure 1 Comparison of Qualifications.

### Employment Status

As indicated in Figure 2, more than 60 per cent of respondents in all three cohorts occupied a full time salaried position. Less than 10 per cent of respondents in each cohort were self employed. In the under 35 age group more than 10 per cent of respondents were full time students and approximately 4 per cent were unemployed. In comparison to the other cohorts, more women in the 35 – 50 year age group worked part time. There were also more retirees amongst the cohort who were over 50 years of age.

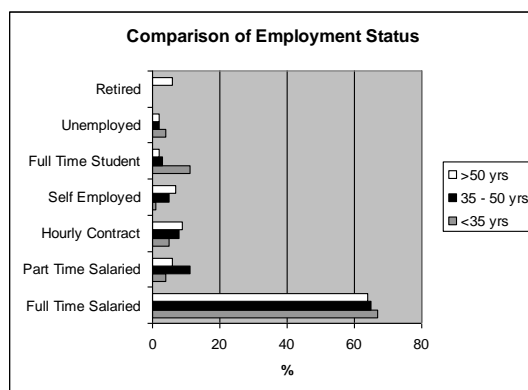


Figure 2 Comparison of Employment Status

## Remuneration

The remuneration for women in the 35 – 49 year age group and the women who were aged 50 or more, was comparatively similar. However, as indicated in Figure 3, women under the age of 35 received significantly less salary than their older contemporaries. The majority of the respondents under 35 years of age received a salary of less than \$75 000 per annum. Approximately 27 per cent of this cohort earned less than \$50 000 per year and 32 per cent earned between \$50 000 to \$75 000 per annum.

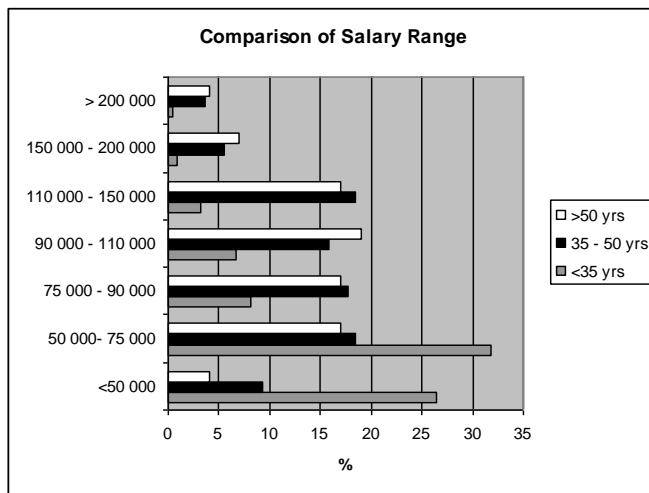


Figure 3 Comparison of Salary Range

Remuneration was an issue identified by many respondents under the age of 35. “More money” was cited by the majority of respondents in this cohort as the most significant factor that would influence their next career move. Qualitative responses by this cohort also reflected their concerns in regard to remuneration. For instance:

*Not earning enough money at least not what I'm worth.*

*...[difficulty in] gaining enough knowledge in a short space of time and lack of pay.*

*My manager had told me that at one stage my salary was well below the salary range for my band.*

## Employment Experience in ICT

Not surprisingly, the respondents under the age of 35 had the least industry experience. As the Figure 4 indicates more than 41 percent of this cohort had less than two years experience in the ICT sector and 30 per cent had between 3 to 5 years experience. A relatively high percentage of women in the 35 – 49 year age group had worked in the industry for 11 to 20 years. However, their representation in the sector declined rapidly before they reached the age of 50.

The women over the age of 50 had the most industry experience. There was considerable career longevity amongst this cohort. Approximately 62 per cent had more than 21 years experience in the ICT sector and more than 17 per cent had 15 – 20 years experience.

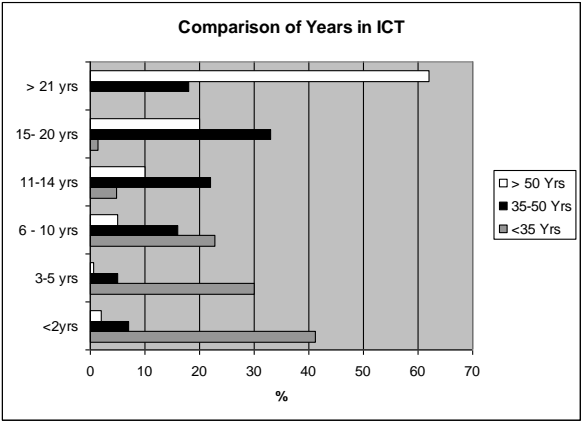


Figure 4 Comparison of Years in ICT

Almost 43 per cent of all respondents had at least one other career prior to commencing their employment in the ICT sector. Approximately 27 per cent of women under the age of 35; 50 per cent of the women between the ages 35 - 49; and 55 per cent of those over 50 years of age indicated that they had at least one career previous to their employment in the ICT industry.

The respondents in all three cohorts were also fairly mobile within the industry. As the following table indicates it was not uncommon for the respondents to change employer frequently. Relative to their time in the industry the women under the age of 35 were the most mobile. Women over the age of 50 changed employer less frequently than the other two cohorts.

Table 1 Change of Employer in the Previous 5 years

Cohort	0	1 time	2-5 times	>5 times
< 35 yrs	31%	28%	19%	0
35 – 49 yrs	37%	27%	24%	1%
>50 yrs	45%	23%	17%	1%

**Hours Worked and Work Life Balance**

The majority of respondents who were employed full time worked more than a 38 hour week. As indicated in Figure 5, more than 30 per cent of respondents in all three cohorts worked between 38 - 45 hours a week. However, age appears to be a factor in the number of hours worked.

Women over the age of 50 worked the longest hours. Approximately 25 per cent of this cohort worked between 45 and 60 hours and 6 per cent worked in excess of 60 hours per week. Women in the 35 to 49 age group also worked significantly longer hours than their young contemporaries. More than 22 per cent of this cohort worked between 45 and 60 hour a week and 2 per cent also worked more than 60 hours a week.

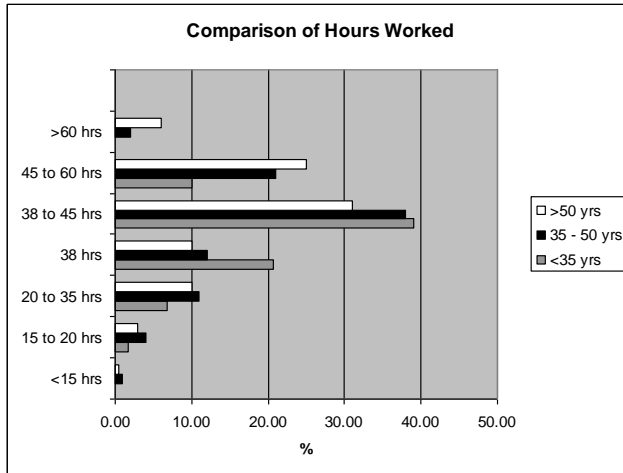


Figure 5 Comparison of Hours Worked

Although long work hours appeared to be the norm, respondents also had a number of responsibilities outside the work environment. The main responsibilities common to all cohorts included child care, study and a carer's role. As Table 2 indicates women in the 35 - 49 year age group had the most child care responsibilities. They were also the cohort most actively engaged in additional study. The cohort over the age of 50 had almost equivalent child care and caring roles. There were more women under the age of 35 with study commitments than women with child care or other caring responsibilities.

Table 2 Additional Responsibilities

Cohort	Child Care	Study	Carer
>35 yrs	11%	26%	9%
35 – 49 yrs	47%	32%	16%
>50 yrs	19%	24%	18%

Approximately 44 percent of all respondents had a career break at some point in their working life. However, a career break was more common for women aged between 30 and 49. Almost 53 per cent of this cohort had taken some time out from their career. As the following comments indicate the effect of the career break varied.

Some respondents utilised the opportunity to undertake further study and improve their employment prospects; others found that the break had an adverse effect on their career; and, for some women, the career break was a catalyst for a change in career direction:

*negative effect...had to reinvent myself and take a different career path altogether*

*there is no progress (promotion); while you are away new technologies are introduced in an organisation; when one returns from maternity, orientation is needed for familiarisation, as a result peers (especially male) progress.*

*Refresh[ed] me, better prospects.*

*Stalled it[my career]! I went back to Uni and did some more units as IT had changed dramatically, but decided not to return to full time work as I did not want to take on such a huge responsibility.*

*Very bad, I've had to start from scratch with previous work experience totally ignored. That's where I am now, trying to rebuild my career, and at 35 it's not easy.*

Despite these acknowledged issues, “more challenging work” was cited by the majority of women aged between 35 and 49 as the most significant factor that would influence their next career move. Subsequent factors included flexible hours, more money and opportunities for promotion.

Women over the age of 50 also identified “more challenging work” as the most significant factor that would influence their next career move. However, as the following comments indicate, for some respondents over the age of 50 the next career challenge involved the transition from employment to retirement:

*Moving from full time employment to part time/flexible as I pass age 55*

*Moving from full time to retirement in staggered stages – not ever fully retiring*

*Moving toward retirement age without sufficient funds in superannuation*

*Trying to determine how soon to retire*

## **Career Issues**

All three cohorts identified a number of issues that were perceived as having an adverse impact on their career. As Figure 6 indicates, these issues varied according to the respondents age and career stage. However, all respondents were fairly consistent in regard to the perceived lack of mentoring, the lack of female role models in the industry and the inflexible work environment of the ICT sector.

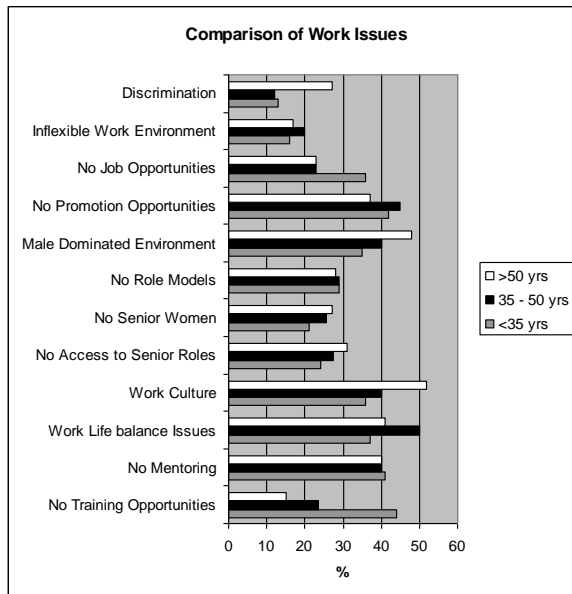


Figure 6 Comparison of Adverse Career Issues

The career issues identified by respondents under the age of 35 included the lack of on the job training and the lack of promotion opportunities. The qualitative responses made by this cohort, in regard to the negative aspects of their career, reflect the difficulties and challenges they face:

*No career advancement - one of the reasons[is] also that I am not living in the capital city which limits my opportunities. There is no incentive to learn more. No opportunity to move horizontally or vertically unless I change[my] job*

*Lack of training to get promoted and lack of skills for job opportunities. Not enough funding to assist in training.*

*[Getting] promotion in ICT field due to limited work experience after finishing studies*

*No opportunity for promotion. No opportunity for skill improvements unless I undertake training courses outside of work (which is what I am currently doing)*

The main issues that women in the 35 - 49 age group perceived as having an adverse impact on their career included work-life balance, the lack of promotion opportunities, the workplace culture and the male dominated work environment. The anecdotal comments concerning the career challenges experienced by this cohort support these findings:

*In this particular job, my most challenging issue is my dinosaur project manager who thinks I am an office assistant*

*Being 40+ in a "young" industry of mostly 20-30 [year old] men*

*I want to work part time but there isn't a lot of part time work for contractors*

*Being able to commit the required time to work, maintain professional development [and] knowledge as well as family... getting the work/life balance correct the time requirements of my work, versus the time requirements of my husband's work, the time required to look after our children, the time required for domestic duties, for personal exercise and the time to spend quality time with my family.*

*Loss of opportunity for creative and analytically challenging work. 'Boys club' culture. Difficulty obtaining part time employment. Working hours not as flexible as I would like.*

The primary issues that concerned women over the age of 50 included discrimination, the male dominated work environment and the culture of the workplace. The respondents' qualitative responses indicated that both gender and age discrimination were issues of concern for this cohort:

*In a male dominated industry there is tolerance for younger women in support and technical roles but they don't know how to cope with older experienced and competent women in management roles*

*Women such as myself - new Australian, female and mature age - have a triple whammy*

*The major challenge is growing older. Twenty years ago I publicly stated that ageism was more an issue than gender in the ICT industry. So lack of employment opportunities is a major challenge*

*My age counts against me, I suppose...*

Despite the acknowledged career challenges experienced by many women over the age of 50, this cohort had considerable longevity in the industry. The following comments give an indication as to why they chose to pursue a long career in the ICT sector:

*I think it is a very good industry for women in that it provides a range of well paid opportunities*

*I would have left ICT years ago if I wanted a career more than I wanted to work in an area I am passionate about*

*It's good to be part of this community*

*ICT has supported my changing personal life extremely well. I know quite a few women who have stayed in ICT for many years ..."*

*I have enjoyed a very successful career in IT since 1974. I do not believe being a woman has hampered me*

## **Summary**

An analysis of the ACS-W survey results indicates that the factors that typified the working life of women in the ICT sector included career mobility, work life balance issues, the requirement to keep knowledge and skills current and long working hours. These experiences were common to most women employed in the ICT industry irrespective of their age or career stage. Gender specific issues were also identified by many women.

The majority of respondents held a tertiary qualification and were striving to maintain the currency of their knowledge and skills through further study. Career long learning was a priority for many women and was regarded as essential for career development and job security. However, the demands of study and the long work hours required by the profession often left women with little time for family and personal commitments. Consequently, the lack of work-life balance was a significant issue reiterated in the quantitative and qualitative responses of all three cohorts.

A surprising number of respondents had at least one other career prior to working in the ICT industry. ICT was not just a second career move but, for a number of women, it was their third or subsequent career. There was also considerable employment mobility within the IT workforce. It was not uncommon for women to change employers fairly frequently.

Gender issues in the workplace were also acknowledged by all three cohorts. Discrimination, the pervading culture of the workplace and the male dominated work environment were perceived to have an adverse impact on the working life and careers of women in the sector. However these issues manifested themselves differently according to the age and career stage of the respondents.

The respondents under the age of 35 and in the “establishment” career phase were in the main, well educated and career orientated. Their identified priorities included further study and career progression. However, their inexperience in the industry, the lack of available on the job training and the perceived lack of opportunity was the cause of some frustration for this cohort. Remuneration issues and the feeling that their contribution was undervalued both in terms of pay and recognition also impacted on women in the “establishment” phase of their career.

The respondents who were aged between 35 and 49 were considered to be in the “growth” phase of their career. During this career phase work life balance was an issue of major concern for many women. A significant number of this cohort had families to care for; many respondents had study commitments and some also had caring responsibilities. This cohort also worked long hours and was career focused. However, the lack of promotion opportunities and the lack of challenging work often frustrated their career progression.

During the “growth” career phase a significant number of women took some “time out” of the industry. The effect of mid-career break varied. Some women found that the break in their career had adverse consequences; others utilised the time to up date their skills and qualifications; and, for some women, it provided the impetus to

change career direction all together. Part time work was attractive to women in this career phase but not always easy to obtain. There were however, a considerable number of women who exited the ICT industry during this career phase and did not return. This is often cited as a difficult career stage in terms of retention of female ICT workers (Diamond & Whitehouse, 2007; Timms, 2008).

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The respondents over the age of 50 and in the “maintenance” phase of their career were, in the main, well educated and well remunerated. The majority of women in this cohort had considerable industry experience, career longevity in the ICT sector and a demonstrated commitment to the industry. However, some women in this cohort were also at the stage in their career where they were contemplating the transition from paid employment to retirement.

For a number of women in the maintenance career phase the work environment was perceived as fairly hostile. The male dominated work environment, the over all work culture and discrimination issues were reported by this cohort as having an adverse impact on their working life. The discrimination experienced by this cohort included not only gender discrimination but also age discrimination. For some women the lack of challenging work exacerbated their feelings of being undervalued.

However, other women commented that a life long career in the ICT sector had been rewarding. The ICT sector had provided them with a successful career path, provided well paid opportunities and was flexible enough to support their changing personal circumstances. Their commitment to the industry was obvious and they were “passionate” about their role. They would be ideal mentors, or role models, for ICT women in the establishment and growth career stages, and in fact, many respondents in this cohort offered their time for mentoring purposes.

## **Conclusion**

As indicated by the quantitative and qualitative survey responses, the career aspirations and needs of women in the ICT sector change over time. These changes are broadly related to their age and their career stage. Many of the respondents also indicated that the challenges they experienced were exacerbated by the male dominated work environment, an adverse work culture, and the demands of the industry itself. For many women their gendered identity compounded their experience of working in a predominately male industry. The long work hours, the lack of part time work and pressure to continue to maintain in the currency of their knowledge created a tension between the demands of work and their roles as mothers, carers, volunteers and partners.

As the review of the literature revealed the career challenges identified by the respondents were indicative of the consequences of working in a predominately male environment. Survey respondent cited the lack of available mentoring, the lack of senior women in the industry and limited access to senior positions as issues which had an adverse impact on their career. The need for an appropriate work-life balance was also a theme reiterated by many respondents irrespective of their age or career stage.

The analysis of the life cycle nexus of women in Australia’s ICT sector has provided a much needed insight into the experiences of women working in the sector. Whilst the difficulties of attracting and retaining women into the ICT industry are significant,

an understanding of their employment patterns; their employment mobility; and their career stage related professional needs may help redress the gender imbalance in the sector. Overall the women employed in the ICT sector wanted to feel valued and they wanted to have their contribution acknowledged. As one respondent said "...just send the flowers!"

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