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The Employment Experiences of Women in the Australian Information Communication Technology Industry

Abstract
This paper presents the results of a survey of the employment experiences of women in the Australian Information Communications Technology (ICT) industry. The survey was conducted in 2008 in response to a perceived lack of data within the sector concerning the working experiences of women. It examines a range of features associated with women employed in the sector - including socio - demographic characteristics, types of jobs held, level of remuneration received, hours worked and balance between work and other life issues. The paper also examines the career aspirations and obstacles experienced within the industry. A comparative analysis of three cohorts of survey respondents is then undertaken according to qualifications, employment status, salary range, years in ICT, hours worked and perceived career issues. The cohorts include women under the age of thirty five, those between thirty five and forty nine and women aged over fifty. The paper concludes with an overview of the career stages of women in the ICT sector.

Keywords
women, information communication technology, career stage, career lifecycle

Cover Page Footnote
This paper is published in honour of our good friend and colleague, Dr. Leonie Warne, who passed away in Canberra during 2010.

This article is available in Journal of Economic and Social Policy: http://epubs.scu.edu.au/jesp/vol14/iss1/2

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 percent of the total workforce. Female participation rates in ICT roles are around 21 percent at the professional level and 18 percent when electronics and communications workers are included. The rate declines to 15 percent when relevant trades' assistants are included.

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; Griffiths, Moore, & Richardson, 2007; Hafkin, 2007; Hellens & Nielsen, 2001; Trauth Quesenberry & Huang, (2009). 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, and other important socio-economic and demographic characteristics.

The lack of data concerning the experiences and perceived challenges of women in the Australian ICT sector prompted the Women's Board of the Australian Computer Society 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 characteristics and career experiences of women engaged in the ICT sector. Respondents were also asked to identify factors that they felt had adversely impacted their careers, and employment challenges they were required to deal with.

This paper commences by reviewing available literature on the topic. The methodology used in the study is then explained. The paper then discusses the survey results. A comparative analysis of respondents according to qualifications, employment status, salary range, years in ICT, hours worked and perceived career issues is undertaken for three defined cohorts. The cohorts include women under the age of thirty five, those between thirty five and forty nine and women aged over fifty. 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 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 (ABSa, 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 (Hess & Jepsen, 2008; Pang & Lee, 2002; Cooke, 1994; Lee & Wilbur, 1985; Mount, 1984).

In the Australian context, the literature with regard to career stages is well established in a number of areas. Smart & Peterson (1997) have explored the career development stages of men and women contemplating a second career. Hess et al. (2008), have explored individuals' perceptions of the psychological contract based on their generational cohort and career stage. Pillay, Kelly and Tones (2006), have researched the career aspirations of older workers and Lynn, Thi, Cao & Horn (1996), 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. Although Smart (1997) has researched the varying differences in Australian professional women's attitudes toward work across the career life cycle, research concerning the career and life cycle nexus of Australian working women remains largely under developed.

The literature review also revealed that there is a deficit of research examining the career stages of women in Australian leading technology sectors. There also appears to be limited international literature dealing with this topic. Relatively recently however, Griffith, Moore, Keogh, Richardson & Tattersall (2006, p. 153), undertook an exploration of the career and the "…the nuances of experiences…" of various age groups of female ICT professionals in the United Kingdom.

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). In addition it has been found that job satisfaction,

career commitment and involvement for women, varies according to career stage (Smart, 1997). However, little is known of the career-life cycle nexus and work experiences of women employed in the ICT sector in Australia.

Methodology

Given the relatively large population, a web based survey was considered to be the best approach for the collection of data. Whilst the use of online survey research is considered to be '…young and still evolving' (Wright, 2005, p. 1), the advantages and disadvantages of employing an online survey methodology have been well researched and explained (Andrews, Nonnecke, & Preece, 2003; Birnbaum, 2004; Couper, 2000; Kaye & Johnson, 1999; Wright, 2005).

Research by Wright (2005, p.1), 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. However, as Andrews et al. (2003, p. 185), noted, use of the Internet to conduct quantitative research presents challenges not found in conventional research. According to Andrews et. al (2003, p. 185), electronic surveys have distinctive technological and response characteristics that affect design, use and implementation. These include survey design, participant privacy and confidentiality, sampling as well as distribution methods and response rates.

The survey underwent a hard copy and an online trial before it was made available to prospective respondents. The hard copy and on-line trials assisted in identifying the internal reliability, consistency, structure and validity of the survey. The online pre-test also enabled the authors to fully exploit design options such as links, defaults and menus available in the online environment. As Andrews et al. (2003, p. 4), have commented, the web-based survey designer has a wide range of textual options, format control and graphics not available to researchers using alternative approaches. However, as Andrews et al (2003, p. 4) also points out, web-based surveys are more challenging to design and more technically difficult to implement because of these options.

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 the response rate of the survey (Kessler, Little, & Groves, 1995; Yammarin, Skinner, & Childers, 1991). Research by Yammarin et al. (1991, p. 631) indicates that, on average, the use of

incentives increases a survey response rate by 6.5 percent. According to Yammarin et al. repeated contact in the form of follow-ups are also effective in increasing survey response rates.

The incentive, a bouquet of flowers delivered to the 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 potential non-respondents to complete the survey questionnaire. 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. For example, personal data such as names and contact details were removed from the survey information and stored separately. The survey data was also stored in a secure location and access to the data was limited to the survey authors.

The survey was uploaded on to the ACS website for members to complete between the fourteenth of May and the third of June, 2008. The survey consisted of 35 questions relating to demographics, qualifications, remuneration, time spent and roles within 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 that could be provided to address these challenges.

Potential survey respondents were contacted, via email prior to the commencement 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 contacted 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 represented 28 percent of the female ACS membership. Excel was used to analyse the survey data and to create the pivot tables. The respondent's qualitative responses were manually reviewed and dominant themes categorised. A subsequent review of the respondent's demographic data, age and occupation indicated that the respondents were representative of the female membership of the ACS. The relatively high response rate was also indicative of the survey's external validity (Cook, Heath, & Thompson, 2000).

Survey Demographics

All respondents, except for one, were living in Australia. The overwhelming majority of women resided in cities, with, 93 percent of respondents residing in an urban area. The remainder lived in rural locations.

Fifty percent women in the industry held Post Graduate qualifications. This compares with 4.5 percent of the Australian female population over the age of fifteen years, with some form of qualification – who held a Post Graduate qualification (ABS 2006a). The ICT women's workforce is therefore relatively highly qualified. Twenty eight percent held a Masters degree, 16 percent had completed a post-Graduate Degree and six percent held a Doctoral qualification.

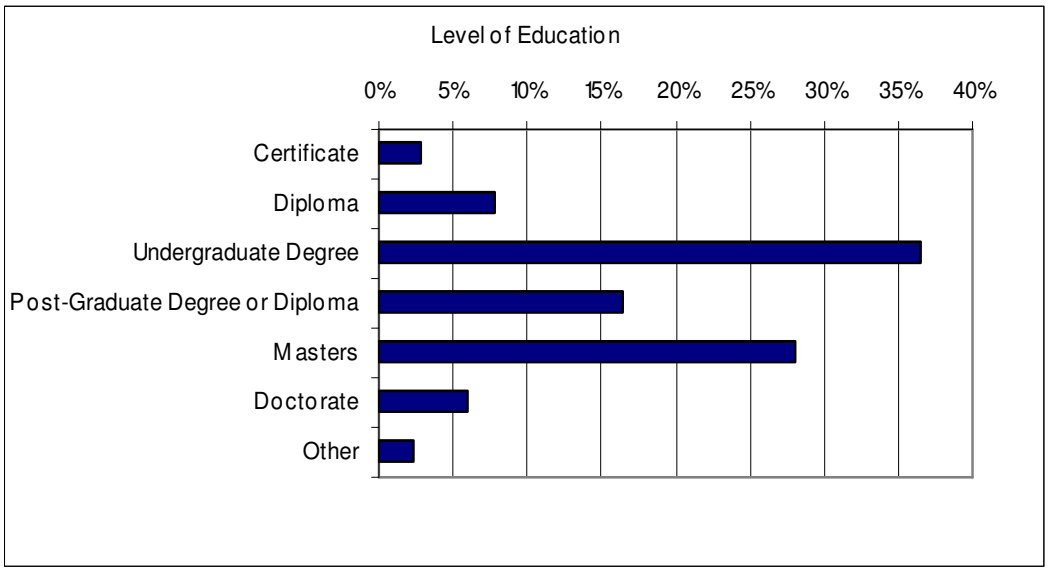

Figure 1: Level of Education

The survey respondents were employed in a range of roles. According to the ACS (2009a) the majority of women employed in ICT are concentrated in the areas of Professional, Scientific and Technical Services, Public Administration and Safety as well as Information Media and Telecommunications and Financial and Insurance Services. As Figure 2 indicates, 12 percent of survey respondents reported their occupations as consultants, 10 percent as Project Managers, nine percent were Programme Analysts, 12 percent were in IT Management and 10 percent were employed as Business Analysts. The employment areas of Research and Development, Document/Report Writer, LAN Management and

Administration, Computer Graphics Designer and IT security had the least number of employed women.

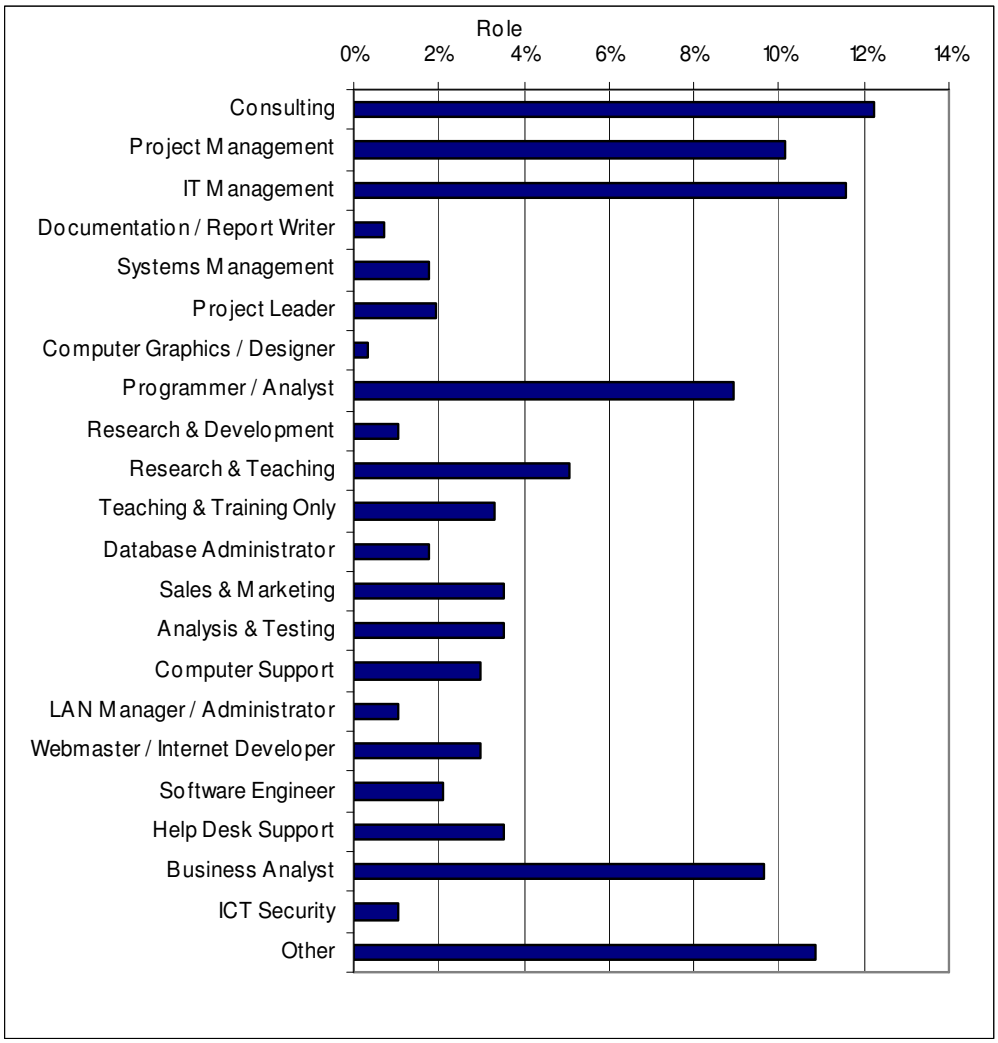

Figure 2: Role of Respondents

As indicted in Figure 3, the age range of respondents was evenly spread, with twenty two percent of the 678 women who participated in this survey aged less than 30 years, 23 percent aged 30-39 years, 29 percent aged 40-50 years and the remaining 27 percent were aged over 50 years

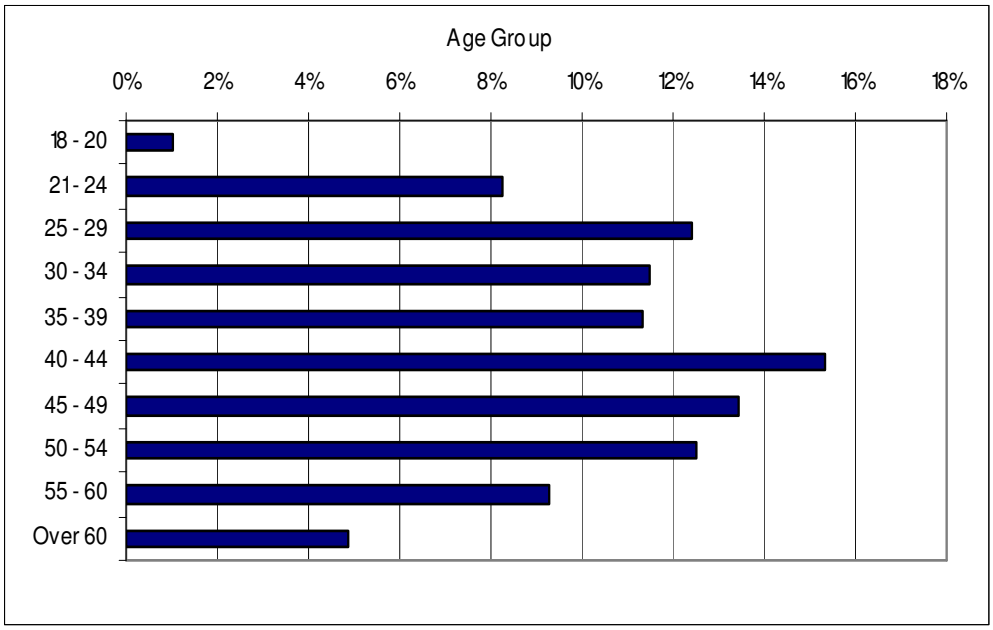

Figure 3: Age of Respondents

Age and Career Stage of Women

In order to examine the career stages of women engaged in the ICT sector, the survey respondents were divided into three cohorts based on age. The first cohort consisted of women less than 35 years of age, the second included women aged between 35 and 49. Women more than 49 years of age constituted the third cohort. These age ranges were chosen to represent the life stages of early, middle and mature adulthood. These cohorts also broadly correspond with the career stages identified by Levinson (1986). Almost 33 percent were aged less than 35, approximately 40 percent were between 35 and 49 years of age and almost 27 percent were over the age of 49.

While these age intervals are not fully compatible with those used by the Australian Bureau of Statistics in publications from the 2006 Population Census (ABS 2006b), nevertheless, it is instructive to note that this data compares with a figure of 39 percent for employed females for Australia as a whole, for the age range 15 to 34. The proportion of employed females for Australia as a whole for the age range 35 to 54 was 48 percent, while that for employed females in the age range 50 and above, was 13 percent. Compared with the employed female

workforce for Australia as a whole, the ICT sector would appear to have a noticeably higher proportion of women employed in the more mature age ranges.

Qualifications

An analysis of the qualifications held by the three cohorts revealed that the level of formal qualification varied according to age and subsequent career stage. As illustrated in Figure 4, more than 47 percent of respondents under the age of 35 had an Undergraduate qualification, approximately 9.5 percent of this cohort had a Post Graduate degree and 31 percent had a Masters. Less than 1 percent had a Doctoral qualification and 7.5 percent had a Diploma or a Certificate.

Approximately 36 percent 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 percent had a Diploma or a Certificate.

The respondents aged 50 years or older had the highest levels of qualification. Almost 17 percent held a Doctoral qualification, 22 percent had a Masters, 24 percent had a Post Graduate Degree and 24 percent had an Under Graduate qualification. The remaining 13 percent had a Diploma or a Certificate.

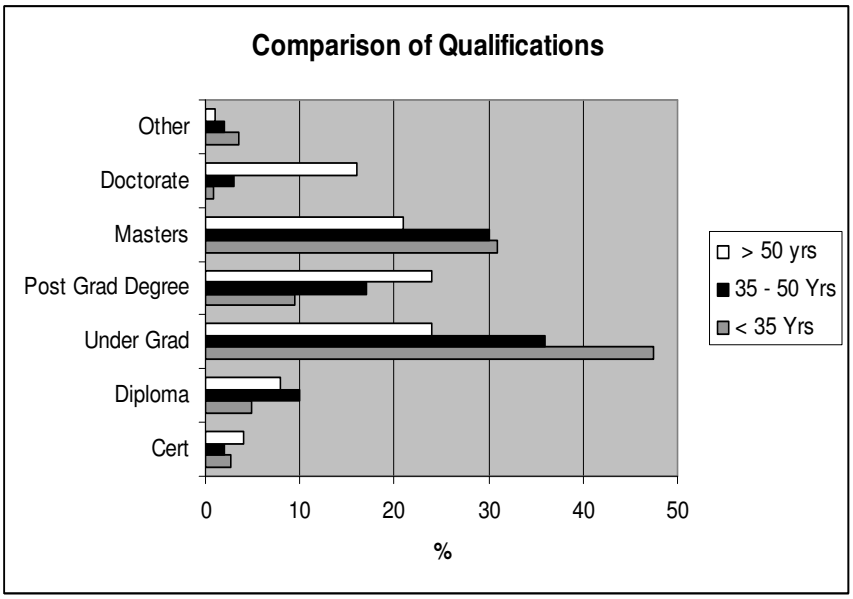

Figure 4: Comparison of Qualifications According to Cohort.

Employment Status

As indicated in Figure 5, more than 60 percent of respondents in all three cohorts occupied a full-time salaried position. Less than 10 percent of respondents in each cohort were self employed. In the under 35 age group more than 10 percent of respondents were full time students and approximately 4 percent 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.

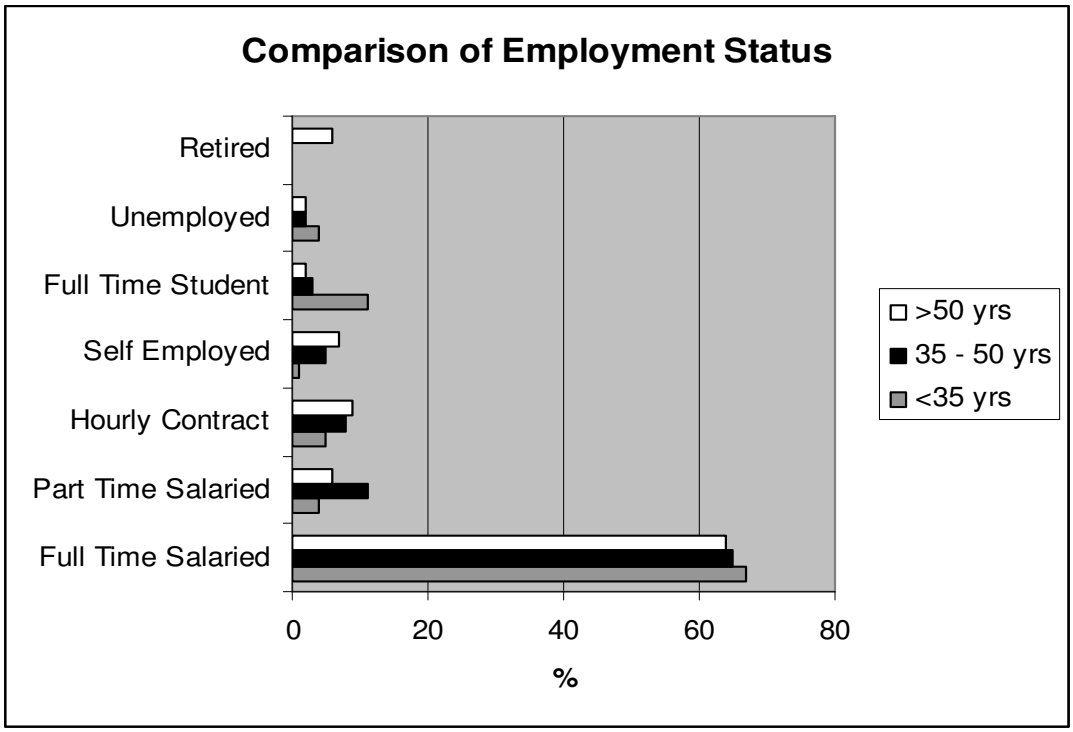

Figure 5: Comparison of Employment Status

Remuneration

The remuneration for women in the 35 – 49 year age group and the women who were aged 50 or more, was similar. However, as indicated in Figure 6, 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 percent of this cohort earned less than $50 00 per year and 32 percent earned between $50 000 to $75 000 per annum.

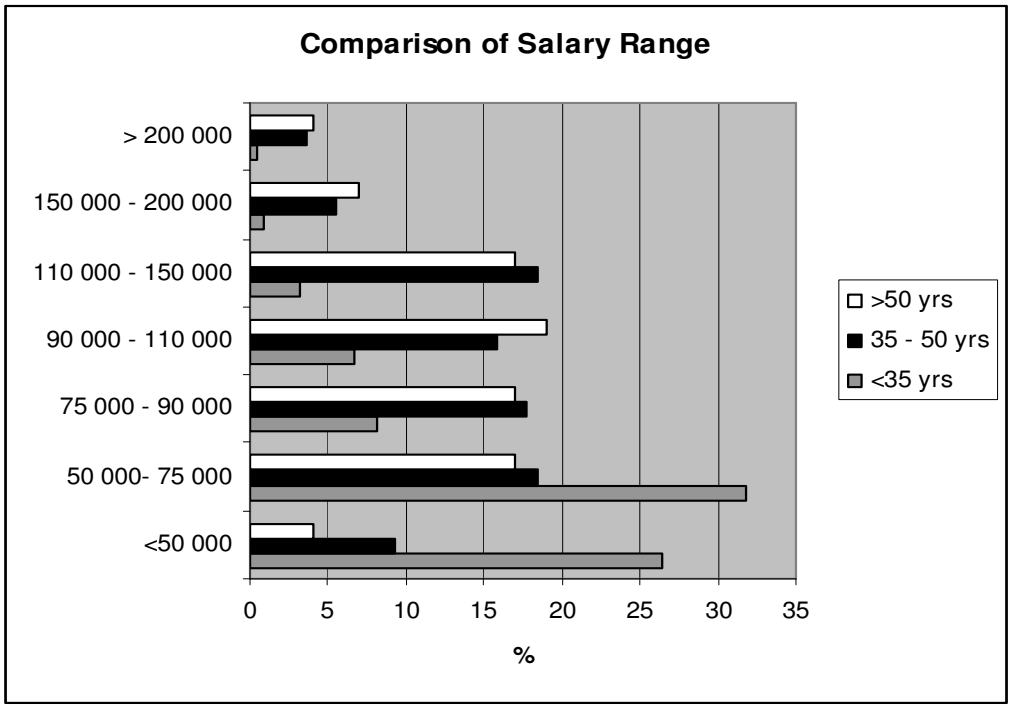

Figure 6: Comparison of Salary Range

Lack of remuneration was an issue identified by a number of 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 frustration and the feeling of being undervalued in regard to remuneration. For example:

> *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.*

It is important to note that the 2009 and 2010 ACS Remuneration Survey Report (ACS 2009b, 2010) indicates little difference in the median base salary of men and women with less than three years experience in the industry. However, in subsequent years women receive less remuneration than their male counterparts with similar qualifications and experience. Over the course of their career the disparity in remuneration becomes significant.

Employment Experience in ICT

Not surprisingly, the respondents under the age of 35 had the least industry experience. As Figure 7 indicates more than 41 percent of this cohort had less than two years experience in the ICT sector and 30 percent 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.

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

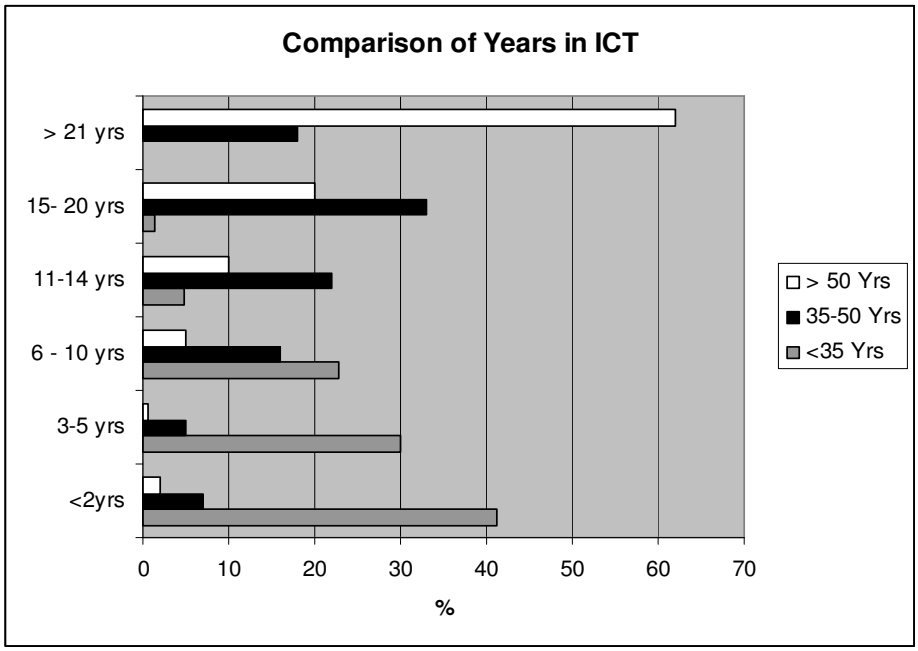

Figure 7: Comparison of Years in ICT

Almost 43 percent of all respondents had at least one other career prior to commencing their employment in the ICT sector. The respondents in all three cohorts were also fairly mobile within the industry. As the following table in 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 relatively more 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 38 hours per week. As indicated in Figure 8, more than 30 percent 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 percent of this cohort worked between 45 and 60 hours and 6 percent worked in excess of 60 hours per week. Women in the 35 to 49 age group also worked significantly longer hours than their younger contemporaries. More than 22 percent of this cohort worked between 45 and 60 hour a week and 2 percent also worked more than 60 hours a week.

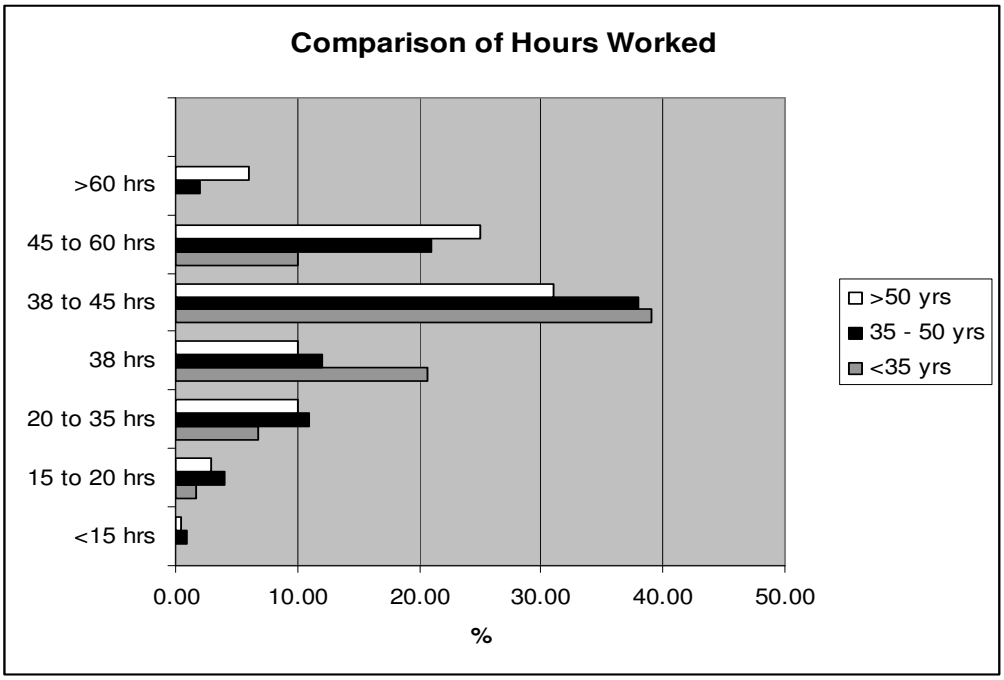

Figure 8: Comparison of Hours Worked

Respondents also indicated a number of obligations outside the work environment. The main responsibilities common to all cohorts included child care, study and a caring 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. The low percentage of women in this cohort, with child care responsibilities, suggests that they were delaying having a family until they were more established in their career.

Table 2: Non- Work Related 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 percent of this cohort had taken some time out from their career. As the following comments indicate the consequences associated with the career break varied.

> *It was difficult to feel "free" to come back to work after having children - feelings of guilt and that I was being selfish wanting to work instead of looking after my family, meant it wasn't a simple decision to work while having young children.*
>
> *...negative effect...had to reinvent myself and take a different career path altogether.*
>
> *I was able to gather more information and able to do self study for future work whilst taking an extended break.*
>
> *...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 males) progress.*
>
> *Refresh[ed] me, ...better prospects.*
>
> *Stopped it [my career] dead. Instead freelanced for four years and changed direction.*

> *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.*
>
> *There was no effect, my workplace and managers were extremely understanding. I have been very fortunate.*
>
> *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.*

"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. Additional factors included flexible hours, more money and improved opportunities for promotion.

Women over the age of 50 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 work 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 subjects of concern that were perceived as having an adverse impact on their career. As Figure 9 indicates, these issues varied according to age and career stage. However, all respondents were relatively consistent with regard to the perceived importance of a lack of mentoring, the lack of female role models in the industry and the inflexible work environment of the ICT sector.

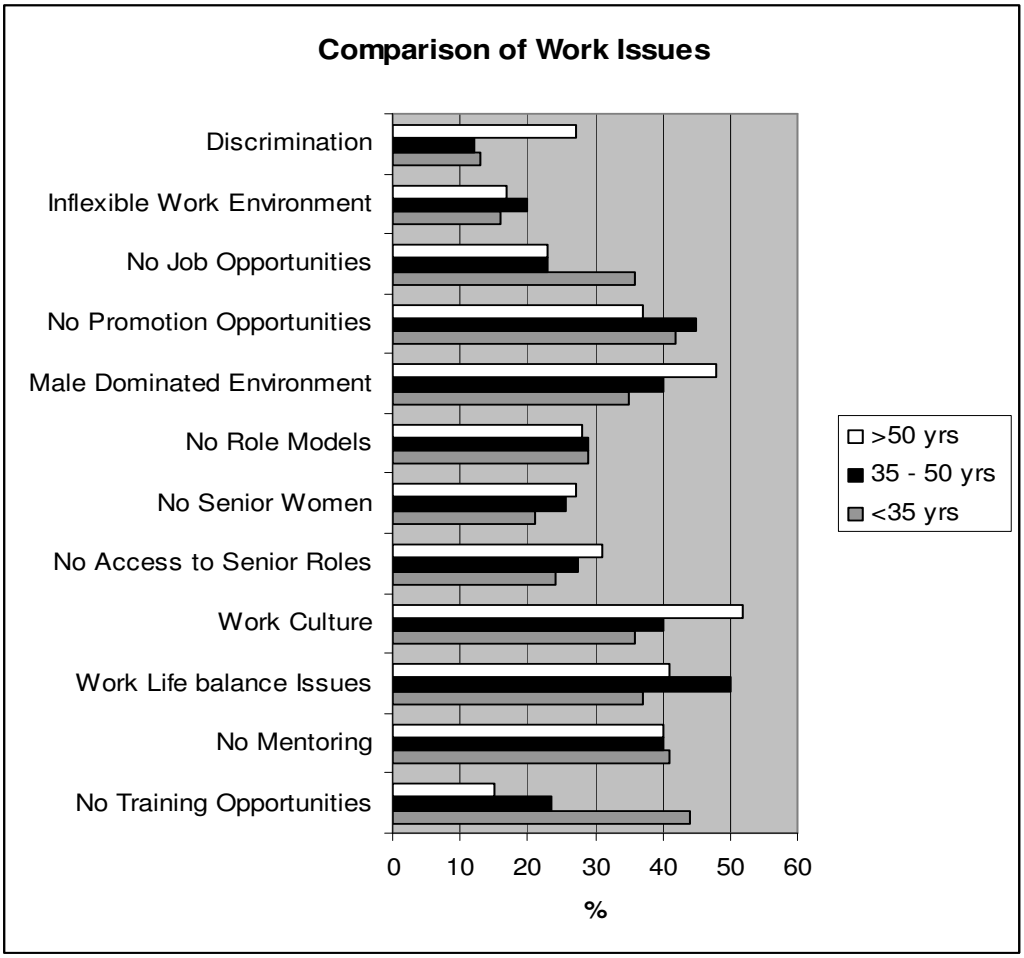

Figure 9: Comparison of Adverse Career Issues

The career issues identified by respondents under the age of 35 included the lack of on-the job training and the lack of promotional opportunities. The qualitative responses made by this cohort, 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 is hard 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 an appropriate work-life balance, the lack of promotional opportunities, the workplace culture and the male dominated work environment.

> *Trying to juggle too many things at once… working, caring for my child, being there for my husband, housework, etc.*
>
> *work/life balance, letting my work become my first priority.*
>
> *In this particular job, my most challenging issue is my dinosaur project manager who thinks I am an office assistant.*
>
> *Trying to juggle family demands with the demands of full time work and career progressions.*
>
> *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.*
>
> *Juggling and prioritising family, work, voluntary work, studying and socialising*
>
> *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 whammee.*
>
> *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 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 and Conclusions

An analysis of the ACS women's survey results indicates that important factors that characterised the working life of women in the ICT sector included 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 relative inexperience in the industry, the lack of available on the job training and the perceived lack of opportunities was cause for 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 promotional opportunities and the lack of challenging work often hindered their career progression.

During the "growth" career phase a significant number of women took some "time out" of the industry. The consequences associated with a 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.

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. As may be expected, 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 relatively hostile. A male dominated work environment, difficulties with the prevailing work culture and discrimination were reported by this cohort as having adverse impacts 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. They had a high commitment to the industry and were "passionate" about their role. It is likely that such women could provide valuable mentoring services for ICT women in their establishment and growth career stages, as well as an important contribution to improving the overall work culture of the sector.

References

ABS (2005) *Employment in Information and Communication Technology (ICT).* From http://www.abs.gov.au/ausstats/abs@.NSF/Previousproducts/6105.0Feature%20Article5Jan%202005?opendocument&tabname=Summary&prodno=6105.0&issue=Jan%202005&num=&view=

ABS (2006a) *Non – School Qualification: Field of Study by Non-School Qualification: Level of Education by Sex, cat. no. 2068.0, Canberra.* From http://www.abs.gov.au/ausstats/abs@.nsf/vwDictionary/40B980A4D60E84F5CA25720A007B67D0

ABS (2006b) *Labour Force Status by Age by Sex*. From http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6291.0.55.001Nov%202006

ACS (2008a) The ICT Industry Report Executive. From http://www.acs.org.au/attachments/2008ACSICTIndustryReport.pdf

ACS (2008b) Women Members Survey 2008, from http://www.acs.org.au/acswomen/survey/ACSWomenMembersSurvey08.pdf

ACS (2009a) Australian ICT Statistical Compendium. Special Extract for ACS-W of Australian ICT Statistical Compendium, from http://www.acs.org.au/index.cfm?action=show&conID=200908071235556586

ACS (2009b) ACS Remuneration Survey Report 2009, from http://www.apesma.asn.au/surveys/acs/summary/summary_report.asp

ACS (1010) ACS Remuneration Survey Report 2010, from http://www.apesma.asn.au/surveys/acs/summary/summary_report.asp

Andrews, D., Nonnecke, B., & Preece, J. (2003) Electronic Survey Methodology: A Case Study in Reaching Hard-to-Involve Internet Users. *International Journal of Human-Computer Interaction, 16*(2), 185-210.

Bandias, S., & Warne, L. (2009) *What Women in ICT Say*. Paper presented at the The Australasian Conference on Information Systems. November 2009, Melbourne.

Birnbaum, M. (2004) Human Research and Data Collection via the Internet. *Annual Review of Psychology, 55*(1), 803-832.

Cabrera, E. (2007) Opting out and opting in: understanding the complexities of women's career transitions. *Career Development International, 12*(3), 218-237.

Chi-Ching, Y. (1995) The Effects of Career Salience and Life-Cycle Variables on Perceptions of Work-Family Interfaces. *Human Relations, 48*(3), 265-284.

Cho.H. Larose.R (1999). Privacy Issues in Internet Surveys. *Social Science Computer Review, 17*(4), 421-434.

Cook, C., Heath, F., & Thompson, R. (2000) A Meta-Analysis of Response Rates in Web- or Internet-Based Surveys. *Educational and Psychological Measurement, 60*(6), 821-836.

Cooke, D. (1994) Measuring career stage. *Human Resource Management Review, 4*(4).

Couper, M. (2000) Review: Web Surveys: A Review of Issues and Approaches. *Public Opinion Quartly,* 64(4), 464-494.

Diamond, C., & Whitehouse, G. (2007) Gender, Computing and the organisation of Working Time: Public/private comparisons in the Australian context. *Information, Communication & Society, 10*(3), 320-337.

Elder, G. (1975) Age Differentiation and the Life Course. *Annual Review of Sociology, 1*(1), 165-190.

Griffiths, M., Moore, K., Keogh, C., Richardson, H., & Tattersall, A. (2006) Inclusion Through the Ages? Gender, ICT Workplaces, and Life Stage Experiences in England *Social Inclusion: Societal and Organizational Implications for Information Systems* (pp. 153-168).

Griffiths, M., Moore, K., & Richardson, H. (2007). Celebrating Hetrogenity: A survey of female ICT professionals in England. *Information, Communication & Society, 10*(3), 338-357.

Hafkin.N (2007) Women and Gender in ICT Statistics and Indicators for Development. *Information Technologies & International Development, 4*(2), 25-41.

Hellens, L., & Nielsen, S. (2001) Australian Women in IT. *Communications of the ACM, 44*(7), 46-52.

Hess, N., & Jepsen, D. (2008) The Psychological Contract: Investigation of Generaltional and Career Stage Differences. *Academy of Management Proceedings*, 1-6.

Igbaria, M., & Chidambaram, L. (1997) The impact of gender on career success of information systems professionals: A human-capital perspective. *Information Technology & People, 10*(1), 63 - 86.

Kalleberg, A., & Loscocco, K. (1983) Aging, Values, and Rewards: Explaining Age Differences in Job Satisfaction. *American Sociological Review, 48*(1), 78 -90.

Kaye, B., & Johnson, T. (1999) Research Methodology: Taming the Cyber Frontier: Techniques for Improving Online Surveys. *Social Science Computer Review, 17*(3), 323-337.

Kessler, R., Little, R., & Groves, M. (1995) Advances in Strategies for Minimizing and Adjusting for Survey Nonresponse. *Epidemiol Rev, 17*(1), 192-204.

Lee, R., & Wilbur, E. (1985) Age, Education, Job Tenure, Salary, Job Characteristics, and Job Satisfaction: A Multivariate Analysis. *Human Relations, 38*(8), 781-791.

Levinson, D. (1978) *The Seasons of a Man's Life.* New York: Knopf.

Levinson, D. (1986) A Conception of Adult Development. *American Psychologist, 41*(1), 3-13.

Lynn, S., Thi, L., Cao, S., & Horn, B. (1996) The influence of career stage on the work attitudes of male and female accounting professionals. *Journal of Organizational Behavior, 17*(2), 135-149.

Mount, M. (1984) Managerial career stage and facets of job satisfaction. *Journal of Vocational Behavior, 24*(3), 340-354

Pang, M., & Lee, C. (2002) Personal Characteristics, Career Stage and Job Satisfaction. *International Journal of Employment Studies, 10*(1), 105-132.

Pillay, H., Kelly, K., & Tones, M. (2006) Career aspirations of older workers: An Australian study. *International Journal of Training & Development, 10*(4), 298-305.

Smart, R. (1997) Career Stages in Australian Professional Women: A Test of Super's Model. *Journal of Vocational Behaviour, 52*(3).

Smart, R., & Peterson, C. (1997) Super's Career Stages and the Decision to Change Careers. *Journal of Vocational Education, 51*(3), 358-374

Super, D. (1957) *The Psychology of Careers: An Introduction to Vocational Development.* New York: Harper.

Super, D. (1980) A Life Span, Life Space Approach to Career Development. *Journal of Vocational Behavior.* 13, 282-298.

Super, D. (Ed.). (1990) *Career and Life Development*. San Francisco: Jossey-Bass.

Suzyn, O., & Lynn, I. (1990) Age vs stage models of career attitudes of women: A partial replication and extension. *Journal of Vocational Behavior, 36*(1).

Timms, C. (2008) Riding a hydra: Women ICT professionals' perceptions of working in the Australian ICT industry. *Information Technology & People., 21*(2).

Trauth, E.M., Quesenberry, J.L. and Huang, H. (2009). Retaining Women in the U.S. IT Workforce: Theorizing the Influence of Organizational Factors. European Journal of Information Systems, Special Issue on Meeting the Renewed Demand for IT Workers, 18, 476-497

Wright, K. (2005) Researching Internet-based populations: Advantages and disadvantages of online survey research, online questionnaire authoring software packages, and web survey services. *Journal of Computer-Mediated Communication, 10*(3).

Yammarin, F., Skinner, S., & Childers, T. (1991) Understanding Mail Survey Response Behaviour A Meta Analysis. *Public Opinion Quartley, 55*(4), 613-639.