THE ROLE OF PROFESSIONAL IDENTITY & SELF-INTEREST IN CAREER CHOICES IN THE EMERGING ICT WORKFORCE

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Abstract

This thesis considers the influence of professional identity and self-interest on the educational and career choices of the emerging Information and Communications Technology (ICT) workforce. In particular, it explores how professional identity and self-interest work together to influence these decisions.

Professional identity is one’s self as perceived in relation to a profession and to one’s membership of it. Professional identity is created through one’s beliefs and attitudes, values, motives and experiences through which individuals define themselves, in their current or anticipated professional life. It is associated with the accrual of symbolic resources including status and esteem, mastery, sense of belonging and attachment. By contrast, self-interest, in the context of career choices, can be understood in relation to the structural opportunities and benefits that an individual believes can be acquired through specific educational or career actions. It is associated with the perceived likelihood of the accrual of material (economic and social) resources. Both professional identity and self-interest as motivators for career choice have been less than comprehensively explored. Though the extant literature has tended to treat these constructs as independent, it is instructive to consider their inter-relationship in terms of their influence on career decisions. A qualitative exploratory study was undertaken to examine this relationship and its implications.

Semi-structured face-to-face interviews were conducted with 52 ICT students from four Australian tertiary education (university and Technical and Further Education (TAFE)) institutions to explore how they conceptualise a career in the industry and what they perceive as the opportunities and constraints to their entry and continued employment in the sector. Professional identity issues featured strongly in
respondents’ accounts of their choices to pursue careers in the ICT industry. The perceived high status associated with being an ICT professional appeared as a strong motivator for students seeking an ICT career. Even the perceived stereotype of ICT workers as ‘nerds’ or ‘geeks’ was positively viewed as an indicator of the high level of technical proficiency and intelligence required to undertake this work.

To date, initiatives by ICT industry groups and government to improve enrolment numbers in tertiary education have been based largely on the assumption that greater connection with, and understanding of the industry, will increase the likelihood that students will ultimately decide to pursue ICT careers. Such a view is supported by the career development literature, which suggests that a sense of belonging and attachment is instrumental in the development of a strong professional identity and is an antecedent to pursuing a specific career. Despite believing that they shared similar characteristics with ICT professionals, most respondents reported a low sense of belonging and attachment to the ICT industry. Although university respondents had a greater number and range of formal opportunities to connect with ICT professionals than did TAFE respondents, this did not result in university respondents’ reporting higher levels of connectedness with the industry. The findings indicated that respondents did not perceive a lack of sense of belonging and attachment to the ICT industry as an impediment to their pursuing a career in the industry.

Further, self-interest featured strongly in respondent accounts of their intention to pursue a career in the ICT industry. Respondents displayed a strong commitment to a career in the ICT industry and were attracted to the high levels of remuneration, and to a high quality work environment characterised by high levels of autonomy and opportunities for pursing work–life balance. Respondents also reported their belief
that ICT work experience in addition to the ICT knowledge and skills acquired through their studies, would increase their job security and career opportunities based on the desirability and transferability of ICT competence across occupations. Career-related factors such as outsourcing, off-shoring, long work hours, fewer professional opportunities for women, and the need for frequent upskilling, were acknowledged as potential but surmountable challenges. Respondents exhibited a nascent understanding of how these factors might work to limit their employment opportunities and success. Although university respondents believed that their studies had prepared them for an ICT career, a sub-bachelor qualification was considered by respondents as insufficient to gain ICT employment in the absence of significant prior industry experience. As a result, many TAFE respondents signalled their intention to pursue a university qualification upon completion of their vocational studies, to improve their employability and the likelihood of gaining a ‘good’ ICT job.

Because this research focuses on respondents who are a priori committed to pursuing a career in the ICT industry (by virtue of their undertaking a formal ICT qualification), the influence of self-interest and professional identity in the decision making by those who opted for alternative careers is unknown, and outside the scope of this enquiry. This thesis concludes that professional identity and self-interest should be considered together, rather than separately, to understand career decisions in relation to the ICT industry.
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<tr>
<td>AIIA</td>
<td>Australian Information Industry Association</td>
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<td>AWPA</td>
<td>Australian Workforce and Productivity Agency</td>
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<tr>
<td>CEDA</td>
<td>Committee of Economic Development Australia</td>
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<td>FITT</td>
<td>Females in Information Technology and Telecommunications</td>
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<td>ICT</td>
<td>Information and Communications Technology</td>
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<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
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<td>QUT</td>
<td>Queensland University of Technology</td>
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<td>RTO</td>
<td>Registered Training Organisation</td>
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<td>TAFE</td>
<td>Technical and Further Education</td>
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<td>VET</td>
<td>Vocational Education and Training</td>
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<td>WIT</td>
<td>Women in Technology</td>
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Statement of Original Authorship

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signature:

QUT Verified Signature

Date: 18/12/2015
Acknowledgements

"There is nothing either good or bad but thinking makes it so."

William Shakespeare (Hamlet, Act II, Scene II)

I would like to dedicate this thesis to my mother Barbara for her continual love and inspiration. Thank you for always being there to ensure that I successfully achieve my goals and for being my best friend.

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“Great coders are today’s rock stars. That’s it”

(will.i.am, 2013)
Chapter 1: Introduction

1.1 RESEARCH BACKGROUND

The ICT industry is critical for developing and maintaining the rapidly changing technologies on which much of everyday society depends. For the purposes of the present research, the term ICT is taken to refer to a broad range of technology activities including product development, business services, content and design, and technology services. The ICT industry plays an important role in a nation’s economic prosperity and the development of technologies for research and development, national security and health care services. In Australia alone, the ICT industry generates more than $AUD 91 billion revenue and contributes eight percent of Australia’s gross domestic product (Australian Information Industry Association (AIIA), 2013). Despite the significance of this contribution in Australia and elsewhere, attracting suitably qualified and experienced specialists to the ICT industry continues to be a major challenge for Organisation for Economic Co-operation and Development (OECD) countries including the United States of America, United Kingdom, Germany and Australia (National Science Board, 2014; OECD, 2013). In 2011 there were approximately 14 million people globally working in the ICT industry. This translates to approximately six percent of all jobs in OECD countries (Holtgrewe, 2014). In Australia, five percent of Australia’s workforce are working in ICT related jobs (Australian Computer Society (ACS), 2015). Projected growth in more positions in the ICT industry combined with current labour shortfalls may negatively impact a nations’ ability to develop, implement and maintain technologies that are critical to the operation of knowledge and technology intensive societies (OECD, 2013).
Globally the ICT industry experienced rapid growth in the 1990, followed by the so-called dot.com crash in 2000 which resulted in massive retrenchments and company closures (Adams, 2013). The recent correction in the market has seen growth in ICT positions and a reported shortage of qualified and experienced workers to fill them in Australia (ACS, 2013; Clicks IT Recruitment, 2015). This shortfall is currently being filled in part by organisations employing workers on foreign working visas (Clicks IT Recruitment, 2015; Holtgrewe, 2014).

There is a strong initiative by the Australian Government and businesses to focus their attention on encouraging individuals to develop technological skills necessary to foster the creation of innovative technology organisations to drive productivity and economic development priorities. Government audits of the Australian ICT industry have raised concerns regarding the ability to fill vacant ICT roles into the future (Australian Workforce and Productivity Agency (AWPA), 2013). Despite a surplus of ICT professionals reported in 2014 as a result of a slowdown in new ICT investment and a dramatic increase in organisations choosing to offshore ICT services, scenario modelling to 2025 forecasts a lack of qualified ICT specialists to meet future employment demand in Australia (Department of Employment, 2014).

Because TAFE and university qualifications are increasingly required to enter the ICT industry in professional roles many applicants are deemed unsuitable by employers if they lack qualifications. The Australian Government attributes the predicted skilled labour shortage to tertiary institutions’ struggling to attract students into ICT courses and low completion rates in key ICT courses (AWPA, 2013). Domestic student enrolments remain well below the peak reported 10 years ago as is tertiary completions (Department of Employment, 2014). Another reported
contributor factor to the shortfall in ICT enrolments is a reluctance of businesses to employ recent graduates. This has been explained as a result of the industry’s dissatisfaction with the knowledge and skills of graduates (AWPA, 2013; Department of Employment, 2014). Further, employers have identified difficulties attracting applicants who possess both ICT skills and soft skills such as project management and communication skills (Department of Employment, 2014).

The ICT industry is not the only industry in Australia that has forecast a skills shortage. Other industries include nursing, school teaching and building professions (Department of Employment, 2015). Skill shortages in the Australian labour market are frequently raised in media reports (Sloane, Mavromaras, & Healy, 2015). Despite industries in Australia claiming skill shortages, the Department of Employment (2015) reports there are “more than enough applicants with relevant qualifications, or appropriate skills and experience, for vacancies in almost every occupation”. Although the Department of Employment did not explicitly include the ICT industry in its recent skills shortages report (Department of Employment, 2015) the report in common with other government and professional organisation reports, raises the same issue: that employers are unable to find suitable qualified applicants to fill vacant positions (AWPA, 2013; Department of Employment, 2014). Although the ICT industry raises the difficulty in recruiting work ready graduates (ALTC & UoW, 2009) the willingness of business to employ ICT graduates to allow them the opportunity to gain experience and training is limited. Thus, on the one hand it appears that the ICT industry itself views the ICT skill shortage as a problem relating to skills and experience. However, on the other hand it appears that the lack of appropriate graduate or entry-level positions has made a substantial contribution to a
readiness on the part of ICT graduates to seek employment opportunities in other professions (AWPA, 2013).

It has been suggested that a lack of diversity exists in the ICT workforce and that this presents barriers for entry and progression by women and other minority groups (Gorbacheva, Beekhuyzen, Craig, & Coldwell-Neilson, 2014). In 2014, 28 percent of the ICT workforce were female (ACS, 2015). Despite this figures’ having increased from previous years, there is a decline in the enrolment of females in ICT tertiary programs (AWPA, 2013; Vitores & Gil-Juárez, 2015). It has been argued that negative media portrayal of ICT work as dull, boring and dominated by socially inept white males in unattractive work environments has also contributed to the decline in the numbers of women pursuing careers in the ICT industry (McLachlan, Craig, & Coldwell, 2010; Vitores & Gil-Juárez, 2015).

Some work and employment conditions associated with working in the ICT industry are considered as disincentives to pursue a career in the ICT industry. These work and employment conditions include: decreased salaries and job insecurity resulting from outsourcing and offshoring of roles; increasing employer demands for current and diverse technical and non-technical skills; long and unpredictable work hours; and limited job opportunities for ICT graduates (Holtgrewe, 2014). Guzman et al. (2008) argues that since 2001, fewer people are seeking ICT careers because the bursting of the ‘dot.com bubble’ has made it more difficult for people to earn extraordinarily high salaries that were previously not uncommon. Job security has also been identified as a concern for ICT professionals resulting from restructuring, outsourcing and offshoring and employers requiring applicants to have both technical and non-technical skills as well to continually upskill throughout their ICT career (Holtgrewe, 2014; Van Sickle, 2008). The need for constant upskilling of ICT
workers is the responsibility of the worker (Marks & Huzzard, 2010) and the worker needs to be readily available to undertake roles that contain unpredictable and long work hours (Fuchs, 2014).

1.2 RESEARCH PROBLEM AND RATIONALE
To understand why there is an issue with attracting individuals to the ICT industry, this research considers the role of professional identity and self-interest in the decisions of tertiary education students to pursue an ICT course and career. These two interrelated phenomena are important as it is unlikely that behaviour is driven by identity or self-interest alone (Marks & Thompson, 2010). Professional identity in this research is associated with the accrual of symbolic resources and is created through one’s attitudes, beliefs, values, motives and experiences through which an individual defines themselves in their current or anticipated professional lives. Self-interest in this research is defined in terms of the structural opportunities and benefits that an individual believes can be acquired through specific educational or career actions. There is evidence that these two constructs, professional identity and self-interest are crucial to an understanding of worker engagement and motivation (Marks & Thompson, 2010). This research explores the potential application of these constructs alone and in concert, to understand formative career choices.

A longstanding argument continues as to whether identity is constructed or discovered (Marks & Thompson, 2010). Schwartz, Luyckx, and Vignoles (2011) call for further theorising and research, to aid in interpreting the interaction between personal construction and social construction process. Their call aligns with an apparent absence of research that incorporates sociocultural factors, individual characteristics, work practices and conditions, and other structural barriers that influence motivations and career expectations at an individual level.
Much identity research has been reported at an organisational rather than an individual level of analysis (Alvesson, Ashcraft, & Thomas, 2008; Eatough & Tomkins, 2014; Jenkins & Delbridge, 2010). However, the individual’s personal and professional biographies are important in shaping their career intentions. Research examining the ICT industry from an individual level using professional identity has focused on ICT workers (e.g. Brooks, Riemenschneider, Hardgrave, & O’Leary-Kelly, 2011; Marks & Huzzard, 2010; Scholarios & Marks, 2007). It is important to note the influence of structural opportunities and constraints on the career choices of ICT students are largely unexamined empirically in graduate employment literature. Scholars have called for self-interest to be further examined more generally (Barbalet, 2012; Marks & Thompson, 2010).

1.3 RESEARCH AIM AND APPROACH

The broad research question guiding this study is: How do professional identity and self-interest influence the intention to pursue a professional career in the ICT industry? The aim of this research is to understand how professional identity (expectations of symbolic resources) and self-interest (structural opportunities and constraints) together influence decisions to pursue study which is expected to lead to professional employment in the ICT industry.

This research adopts a critical realist paradigm and qualitative research methodology. A purposeful sampling strategy was selected. Respondents were reflective of the emerging ICT workforce. Fifty-two students studying ICT at a South East Queensland TAFE or university were interviewed. This research considers the influence of family and peers and education and work experiences that contributed to the decision to work in the ICT industry. The professional identity and self-interest expectations were shaped by these relationships and experiences.
This research makes two contributions in particular. Firstly, it provides an evidence base to inform industry, education and government policy with respect to attracting individuals to the ICT sector by identifying both the positive and negative influencing factors on an individual’s decision to pursue a career in the ICT industry. Secondly it contributes to knowledge about how professional identity and self-interest influence career decision amongst people in the formative stages of their career pathways.

1.4 THESIS OUTLINE
Chapter 2 provides a summary of the existing ICT work environment. It focuses on industry factors which have been identified as contributing to the composition of the ICT workforce. These include: fewer professional opportunities for women; perceptions of the industry; and graduate employment opportunities. A synthesis of the extant literature regarding professional identity and self-interest and their relationship with career decisions is provided in this chapter. Professional identity and self-interest are considered more generally and in the context of the ICT industry specifically. The final section of this chapter presents the conceptual framework for the research.

Chapter 3 outlines and discusses the critical realist paradigm upon which the research design is founded and provides reasoning for selecting a qualitative research approach. The research questions and associated objectives to achieve the research aim are outlined. The research findings are reported in Chapter 4. Chapter 5 provides a discussion of the implications of these findings and compares these against propositions from the existing literature. The practical implications of the results for industry are also described. Finally, the research contributions are highlighted and the limitations and future directions for research are discussed.
Chapter 2: Literature Review

2.1 INTRODUCTION
Attracting suitably qualified and experienced specialists to the ICT industry is a major challenge for OECD countries including the US, UK, Germany and Australia (National Science Board, 2014; OECD, 2013). This research considers the influence of professional identity and self-interest in the decisions of tertiary education students to pursue study toward an ICT career. In doing so it will identify reasons why there is an issue with attracting individuals to the ICT industry. This chapter reviews the literature on the ICT work environment in Australia and internationally and discusses current challenges. It then presents a synthesis of research on professional identity and a justification for the inclusion of self-interest in building understandings of students’ employment motivations and expectations of careers in a profession. The final section of this chapter outlines the conceptual framework which forms the basis of the research.

2.2 ICT WORK ENVIRONMENT
The ICT industry has been referred to as being “hydra-like, difficult to define and highly dynamic” (Timms, Lankshear, Anderson, & Courtney, 2008, p. 156). This is because the ICT industry is characterised by organisational structures, job design and recruitment strategies that are changeable (AWPA, 2013). As Buche (2008, p. 134) suggests, “IT professionals self-select into a work environment characterized by continuous change”. In some respects, the ICT industry is a stand-alone sector. However, ICT workers have the opportunity to work across industries. This is because technology and technology work is imbedded in a range of industries
including, finance, retail, manufacturing, telecommunications, mining, fashion, multimedia, government and entertainment.

In 2014 there were approximately 600,000 ICT workers in Australia representing 5.2 percent of the total Australian workforce. Half of these workers were employed in non-ICT specific industries (ACS, 2015). ICT workers perform a broad range of tasks including developing, providing, distributing, managing and maintaining computer hardware and software, and providing specialised computer and telecommunications services (Adams, 2013; AWPA, 2013). ICT workers include blue and white collar workers, technical and trades people, professionals and executives (Farthing, 2010). Despite this diversity ICT work is identified as being comparatively highly skilled (Holtgrewe, 2014) and comparatively highly paid (Farthing, 2010). The median full-time salary for qualified computer science university graduates in the Australian ICT industry in 2014 was AUD $56,400. This is slightly more than the average graduate full-time salary of AUD$ 55,000 in 2014 (Graduate Careers Australia, 2014).

Despite diverse occupational opportunities and favourable remuneration there is a reported concern for the supply of suitable domestic ICT workers to meet the future demand of the industry. It has been suggested that organisations will require ICT workers that have programming, data analytics and security skillsets that are not readily available in Australia (CEDA, 2015). Contradictory to such a forecast researchers have identified that ICT employment opportunities have decreased as a result of the ICT industry experiencing significant restructuring, outsourcing and offshoring as companies take advantage of inexpensive qualified labour from a global labour pool (Holtgrewe, 2014). As well as fewer opportunities for secure employment owing to outsourcing and offshoring there are also a number of other
career-related matters influencing employment in the sector in Australia. These include: the image of the profession, professional opportunities for women in the sector, general job availability and attractiveness, and graduate employment opportunities. These factors are considered as disincentives to pursuing a career in the Australian ICT industry.

2.2.1 Professional opportunities for women

Despite ICT work being stereotyped as more appropriate for men (Craig, Coldwell, Fisher, & Lang, 2013) women have played and continue to play an important role in the ICT industry (Cockburn, 1985). Gender stereotyping has been linked to an unbalanced gender composition of the ICT workforce (Clayton, von Hellens, & Nielsen, 2009). Well developed countries such as US, Canada, EU, Australia and New Zealand continue to report a low representation of women in the ICT industry (Vitorees & Gil-Juárez, 2015). Despite in recent years the representation of women in the industry has slightly increased (Adams, 2013). In 2014 it was reported that 28 percent of women were employed in ICT occupations in Australia (ACS, 2015). Furthermore, private industry organisations with 100 or more employees in Australia recorded fewer than 30 percent of women in 2013/2014 (Workplace Gender Equality Agency (WGEA), 2013). The underrepresentation of women working in professional roles in the industry continues to be a longstanding and complex issue (Clayton, Beekhuyzen, & Nielsen, 2012; Geneve, 2014; Trauth, 2002; Vitores & Gil-Juárez, 2015) this has been the subject of a considerable body of research that has investigated this phenomenon (e.g. Adya, 2008a; Clayton et al., 2009; Cockburn, 1985; Gorbacheva et al., 2014; Mahony, 1990; Trauth, 2002; Vitores & Gil-Juárez, 2015; Whitehouse & Preston, 2005).
To encourage greater participation of women in professional roles in the ICT industry numerous initiatives have been implemented in Australia. These include offering education scholarships and support networks for female students such as Women in Technology (WIT), an industry body for women in technology and life sciences in Queensland (WIT, 2015) and Females in Information Technology and Telecommunications (FITT) a not for profit organisation promoting the interests of women working in the ICT industry in Australia (FITT, 2015). Such programs provide the financial and other support required to encourage women to pursue study and ultimately a career in the ICT industry. Gender inequality in the ICT workforce is reported as having negative consequences such as a high turnover and alienation. This affects women currently in the workforce in terms of motivation, productivity and organisational commitment. For women who are not yet part of the ICT industry, a lack of women working in the sector may inhibit their considering a career in the industry (Whitehouse & Preston, 2005) as there are fewer role models.

A woman’s choice to embark on or continue in a given career is dependent upon the opportunities and benefits available and the challenges that need to be overcome. It is reported that achieving work-life balance is one of the major constraints faced by women working in the ICT industry (AWPA, 2013). The challenges women experience when balancing home and work responsibilities are seen as seldom imposed upon men; a situation which results in opportunities only for males (Grint, 2005; Rehman & Roomi, 2012; Whitehouse & Preston, 2005). Timms, Lankshear, Anderson, & Courtney (2008) reports that many ICT workplaces adopt a ‘coke and pizza’ approach to work in which employees are expected to work long hours to complete projects. For example, Silicon Valley’s ICT industry also referred to as the ‘American Dream’ is reported as consisting of ICT organisations that have
highly exploitative working conditions which include, high levels of stress and overtime that have become a facet of organisational culture (Fuchs, 2014). It is proposed that these expectations may force women to prioritise work ahead of family commitments in order to be successful and they may consequently select occupations that are more considerate of their family responsibilities.

Gender stereotypes about the ICT industry which position men as ideal or preferred ICT workers may contribute to women believing that they do not have the ability to undertake more specialised roles in the industry. Gender stereotypes are known to influence the career choices of women through an impact on self-efficacy (Clayton et al., 2009). Women have traditionally been categorised as end-users rather than having the expert knowledge and skills to become ICT specialists (Fuchs, 2014; Mahony, 1990). An example of gender stereotyping that leads to such categorisation of women is the notion that “women are good with people but men are good with machines” (Mahony, 1990, p. 323). Empirical research has identified that women, compared to men, tend to underestimate their abilities and are more likely to have anxiety about mathematics. This can result in women’s having less self-efficacy and lower self-concept in technological studies compared to males (McLachlan et al., 2010; OECD, 2015), which may impact their occupational choice.

Eccles (1994) identifies that a woman’s perception of her ability to succeed in an occupation is dependent upon the influence of gendered socialisation factors obtained during their individual experiences and family and peer relationships. There are many factors associated with a woman’s experience of ICT work that requires an in-depth understanding and which cannot be addressed by merely the traditional ‘low numbers’ approach (Adam et al., 2006) through the use of quotas or employment initiatives. These challenges that women continue to face in the ICT industry may
influence the career decisions of women working in ICT or those considering entering the industry.

2.2.2 Perceptions of the ICT industry

The perception that roles in the ICT industry are isolating, ‘geeky’¹ (Jemielniak, 2012, p. 129), ‘nerdy’ and ‘boring’ has been identified by previous studies as contributing to the decision to not pursue a career in the ICT industry (Draus et al., 2014; Geneve & Ganito, 2011; Von Hellens, Clayton, Beekhuyzen, & Nielsen, 2009). Kaplan suggests that young people in particular perceive ICT work to be “poorly paid, dull and offering few opportunities to advance” (AWPA, 2013, p. 64). To combat these negative perceptions, the ACS Chief Executive Officer suggested that the ICT industry needs to “tell its story better…. Australian students do not see ICT as an attractive course of study leading to a rewarding career, which is in fact the opposite of what it is” (AWPA, 2013, p. 64). Quantitative research undertaken by Timms et al. (2008) with 129 female ICT early career professionals in Australia supports this observation, finding that they expected their professional role to be well regarded in the community, to obtain job satisfaction, be socially rewarding and to experience flexible employment. Contrary to stereotypes and expectations, most respondents in Timms et al. (2008) study reported that they did not find an ICT career to be boring, sedentary and or ‘geeky’ once they commenced working in the industry.

Australian federal and state governments and industry organisations continue to invest in the ICT skills pipeline by implementing strategies to change negative perceptions of the industry and to encourage individuals into ICT studies and careers. For example, the ACS established the ACS Foundation to assist the sponsorship of

¹ A *geek* is defined as a highly intelligent yet socially impaired person, a Bohemian and a rebel in style or behaviour.
ICT education and research projects by public and private organisations. It provides career advice, research grants and university scholarships. The ACS Foundation website contains resources promoting ICT careers in an attempt to improve the image and general perception of the industry (ACS Foundation, 2015). Other examples of initiatives include the Technology Takes You Anywhere program funded by the Queensland State Government that promotes ICT study and career opportunities to schoolgirls (Clayton et al., 2012). Notwithstanding these efforts the Australian Government suggests that further work is required by the industry to promote the positive aspects of the industry such as the “dynamic, creative, flexible and interdisciplinary nature” of projects and the range of professional employment opportunities of ICT professions (AWPA, 2013, p. 64).

Graduates face difficulties when transitioning into the ICT workforce because of the reality of working in the ICT profession does not match their perception of the industry. Work and employment conditions in the ICT industry are perceived by some scholars as lending themselves to a new form of capitalism (Fuchs, 2014). Poor work-life balance, work-related exhaustion, increased managerial pressure, diversity barriers, job insecurity and role ambiguity all impact the experience of working in the ICT industry (Adya, 2008b; Fuchs, 2014; Jemielniak & Marks, 2012). These factors contribute to a negative image of the ICT industry in the minds of some.

Despite this negative image of the ICT industry, there are certain roles within the ICT industry that may be appealing to millennials. The introduction and widespread use of interactive social media and greater interactive mobile phone technology has contributed to the positive perception of certain roles. ‘Appreneurs’ and developers are viewed as making a positive difference in people’s lives because

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2 Individuals born between early 1980s and early 2000s.
they are responsible for creating apps that provide value to society by educating and entertaining individuals. For example, apps that perform currency conversions, create shopping lists and assist with sightseeing and places to eat when visiting new places (Mureta, 2012), as well as the rise of the positive computing movement which supports an individual’s well-being (Calvo & Peters, 2014). However, despite the high profile of some roles, ICT employers continue to raise concerns regarding the availability of suitable qualified candidates to fill vacancies in the industry (AWPA, 2013).

2.2.3 Graduate employment opportunities
Over the past few decades graduate employment has dominated global education and economic policy (Tomlinson, 2007). Globally, the ICT industry is accustomed to experiencing skill shortages (Fincham, 2006). The demand for ICT skills in Australia is expected to grow during 2013-2018, with an additional 28,100 jobs likely to be required in 2017 (ACS, 2013), outstripping the supply of skilled workers. Despite the demand for ICT workers it is reported that in 2011, 51 percent of ICT graduates aged 20-29 years were not employed in ICT professional occupations (AWPA, 2013). In 2014 ICT graduate employment was the lowest in five years (Clicks IT Recruitment, 2015). The AWPA (2013) suggests such wastage is a result of a soft market for new ICT graduates, uncompetitive working conditions and employers who faced difficulties with attracting appropriately qualified and experienced candidates for job openings.

To increase employment opportunities and ensure ICT graduates are work ready, the 2013 ICT Workforce Study presented workforce development strategies for industry, tertiary institutions and government. The strategies included improving the ICT apprenticeship/training model, a one year ‘graduate traineeship’ for entry
level career professions and updating the existing vocational education and training (VET) and university curricula to ensure graduates are work ready. The use of targeted career promotion products is recommended by the AWPA (2013) to ‘motivate and excite’ people to pursue a career in the ICT industry. It may be suggested that the AWPA recommendations are aligned with the view that employability relates to the skillset of an individual rather than resolving the structural constraints that exist in the ICT sector. This view appears to be prevalent with policy makers, media, and some academic researchers (Moreau & Leathwood, 2006; Tholen, 2014). These initiatives can be seen to take a deficit approach that holds the students responsible for not having the ‘right skills’ and experience rather than acknowledging the structural problems or the reasonableness of the employers’ expectations. Such an approach is likely to prove unjustified and unhelpful.

2.3 UNDERSTANDING ICT WORK AS A PROFESSIONAL CAREER

A functional concept in professional identity is a profession (Gordon & Wheetman 1980 as cited in Low, Davey, & Davey, 2012). An occupation is regarded as a profession if the services that are provided by its workers are unique and based on specialist knowledge (Macdonald, 2006). Professions were created in Victorian Britain to allow the middle class to establish a social status (Lee, 1995) as it entitled individuals to perform roles that are considered prestigious and autonomous and had power (Slay & Smith, 2011).

Essential elements for an occupation to be classified as a profession include: mastery of skill obtained through formal qualifications; provision of service to the community; code of principles and practice, established specialised ethical code of conduct; community of practice; distinct culture and professional values; level of authority; independent society or institution; concern for public good (Denning,
In terms of occupational prestige, a profession is typically ranked highly in terms of status, income and education. For example, the professional power and authority enjoyed by doctors, dentists, and judges allow them to stand apart from other occupations (Adams, 2013). Economic self-interest also underpins the creation of professions as members seek to gain market control by implementing social closure strategies to control access to education and training opportunities and allow entry to individuals that are considered to be worthy and qualified to practice in the profession (Lee, 1995).

Accounting is considered a mature profession. Lee (1995) identifies the establishment of the accounting profession in 1854 was to protect the economic self-interest of its members as a result of existing economic, political and social factors. Accounting as a profession serves the economic needs for society within a social, legal and political framework, it has public acceptance, professional education is required and accountants must adhere to a professional code of ethics (Low et al., 2012). Accountants who strongly associate themselves to be professional accountants are more likely to adhere to the principles of the profession, whereas accountants who identify more strongly as an employee are more likely to adhere to employers’ demands (Tsahuridu, 2014). By comparison the progress of the ICT industry toward achieving professional status is mixed. Despite a strong rhetoric that ICT work is a profession, it has been argued that to demonstrate the legitimacy of ICT work as a profession a confirmed model or paradigm of the ICT industry which includes all of the various roles that exist in the ICT industry (Denning & Frailey, 2011) is required.
Figure 2.1 identifies the diverse and complex nature of the ICT industry as evidencing four distinct key career disciplines: Content and Design (Application); Technology Services; Business Services and Product Development. The four disciplines are differentiated by the ICT product created and the services offered. The first discipline Content and Design (Application) focuses on the creation of consumer content and business applications; Technology Services provides ICT services and advice to clients; Business Services performs the analysis, design and application of technology solutions to resolve business problems and Product Development is
responsible for designing and developing software applications and hardware products (ACS Foundation, 2014). Within each discipline there are differences between the roles and the types of professional an ICT specialist reports to within an organisation and there are different pay levels associated with the different services as well as status.

Another complexity associated with the industry is that for some ICT roles a qualification is deemed desirable but not necessary if the applicant has as a certification (Department of Employment, 2014), such as a Cisco Career Certification\(^3\) (Cisco Systems, 2015). In this context it is deemed that applicants do not require a formal tertiary qualification because self-learning is common amongst ICT workers with many developing their computer-related skills during their youth, with formal training occurring in some cases after employment (Adams, 2013). The fast moving pace of change in the industry and the inability of tertiary educations to continually update their curriculum to meet this pace of change may also indicate why organisations do not require applicants to have completed tertiary education.

As Figure 2.1 shows there are various education pathways an individual can choose to enter into the industry or embark on an ICT career. The various education pathways to perform particular roles in the ICT industry make professionalising the industry challenging. The education pathways include: on-the-job training; VET programs; undergraduate, honours and postgraduate university programs; private training institutions; and industry group certifications (Farthing, 2010: p. 3).

VET qualifications range from: Statement of Attainment, Certificate I to IV, Diploma and Advanced Diploma, Graduate Certificate to Graduate Diploma. VET

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\(^3\) A Cisco Career Certification authenticates an individual’s knowledge of Cisco products and technologies and assists in building their career as a networking professional.
Qualifications are designed to prepare an individual for a specific trade or occupation. Typically non-academic in nature, such qualifications focus on the development of practical skills and procedural or technical knowledge. At the post-secondary level in Australia, VET is typically provided by a TAFE college, or a registered training organisation. VET courses can be stepping stones to enrolling in a university degree or gaining credit towards units in a university degree. The basic entry requirement to complete a VET course are a year 12 qualification and a tertiary entrance score although there are other equivalents that can be used. The course fees range from AUD$500 to AUD$22,000 (Universities Admissions Centre (NSW & ACT) Pty Ltd, 2015).

Private training institutions provide industry specific qualifications and are independent education providers. Many are registered training organisations (RTOs) and their course content and delivery is monitored by the Australian Skills Quality Authority. The RTOs and other VET sector organisations provide a range of vocational courses and degrees such as a VET course, undergraduate or postgraduate degrees, as part of the Australian Qualifications Framework. Entry requirements vary from course to course, assessed through prior education achievements, interview, portfolio, audition, industry experience or tertiary entrance scores (Hobsons, 2015). For example, to obtain a Cisco Certified Technician Data Center certification a passing score is required on the Certified Cisco Certified Technician Routing & Switching exam. To sit the certification costs US$299.00 (Cisco Systems, 2015).

University courses range from: undergraduate, honours, and postgraduate courses to short courses and professional development programs (Australian Education Network, 2015). University education is designed to build on an individual’s practical skills, theoretical knowledge and provide research skills. There
are various entry pathways to university courses including: an individual’s tertiary entrance score or level of experience in an industry. Completing a Bachelor degree costs between AUD$15,000 to AUD$33,000 and AUD$20,000 to AUD $37,000 for a Masters degree (Universities Admissions Centre, 2015).

The implication of this for ICT education in Australia is that people wishing to prepare themselves for undertaking ICT professional roles have the options of acquiring competence through experience, or through the VET sector, or through the tertiary sector, by enrolling in a course that leads to an academic qualification. All of this is to background a situation in which ICT education and training is in a state of change and heightening expectations and regulation of standards and workplace performance. This research focuses on individuals completing a VET qualification through a TAFE college or a university institution.

ICT work is somewhat dynamic and unstable as a result of the rapidly changing nature and volatility of the industry, and the high failure rate of small to medium sized companies which characterise it (Adams, 2013). ICT work environments experience dramatic and rapid changes compared to more traditional professions as a result of technological trends (Brooks et al., 2011; Fincham, 2006). As a result it has been suggested that ICT professionals perform their identities differently, compared with their counterparts in more traditional professions (English-Lueck, Darrah, & Saveri, 2002; Jemielniak, 2012; Westenholz, 2006). For example, unlike traditional professions, new roles that did not exist previously in the ICT industry frequently appear. ICT workers are therefore required to be flexible and able to readjust and reskill to support and create new technologies and to constantly re-invent themselves if they wish to remain in the industry (Adams, 2013; Billett, 2010; Kelan, 2008).
Globally the ICT industry has struggled to be seen as a profession, and there are longstanding debates within the industry as to what roles constitute the ICT profession (Denning, 2001). This disagreement creates a challenge for the individual when forming an ICT professional identity. A professional identity allows a profession to be seen as a credible and important contributor to the welfare and development of society (Low et al., 2012). Despite the ICT profession’s reputation being challenged because of failed ICT changes, security breaches and PC operating errors which have resulted in peoples’ questioning the reliability of ICT applications and services, the heavily reliance on ICT by the corporate world ensures that if the professionalising project is weak the ICT industry still has significant labour and product market power.

Research undertaken by Scholaris and Marks (2007) comments on the perception by the broader community that ICT professionals have an elite professional identity because ICT roles have an intellectual symbolic status and careers in ICT are believed to provide generous material rewards. This perception is supported by research undertaken by Courtney, Anderson, Timms, and Lankshear (2009) who found that respondents expected a positive community image and expected to receive a good salary. Kim, Hatcher & Newton (2012, p. 2) identifies a positive relationship between “professional identification, image and reputation”. It can be argued that the inability to agree on role membership in the ICT industry, the rapidly changing work environment and the various education pathways to enter the ICT industry adds a complexity to constructing a strong professional identity for the ICT profession.
2.4 THEORETICAL APPROACH

In the context of the ICT work environment described above the dual constructs of professional identity and self-interest provide a useful lens to understand why individuals chose to pursue a career in the ICT industry. Professional identity is the primary perspective within which orientation to particular careers has been examined previously (Marks & Thompson, 2010). However, self-interest, is defined here in terms of the perceptions and expectations of material (economic and social) gains offered by working in the industry, is also influential in career selection decision making. Considering the interaction of professional identity and self-interest on decision making allows for an understanding of how professional identity resources - such as social and emotional ‘needs’ which include a sense of belonging and attachment, mastery, and status and esteem - shapes the perceived likelihood of accrual of material (economic and social) resources such as wages and employment conditions.

2.5 PROFESSIONAL IDENTITY

Identity studies provide an in-depth insight into the factors that influence an individual’s orientation towards a particular career. Identity operates at an individual, organisational and group level (Hallier & Cascón-Pereira, 2012). Identity is a complex and contested construct which has been explored in various fields (Eatough & Tomkins, 2014; Marks & Thompson, 2010; Schwartz et al., 2011; Wetherell, Hey, & Reicher, 2009) including, psychology, sociology, anthropology, linguistics, political science, education, family studies and public health (Schwartz et al., 2011).

Identity theory addresses an individual’s connection and attraction to a profession. Fraher and Gabriel (2014, p. 928) refer to identity as a “master signifier” in many areas of social and organisational studies because of the importance of this
construct on motivating a person’s behaviour in the workforce and shaping career choices. Identity studies allow for the exploration of the relationships that exists between an individual’s values and experiences, social identities and organisations (Marks & Thompson, 2010).

Sedikes and Brewe (2001) suggest that individuals seek to create their identity (by self-determination and self-interpretation) through their unique traits (individual), dyadic relationships (relational) and group membership (collective). An individual’s sense of occupational or professional identity is a strong element of their sense of personal identity (Skorikov & Vondracek, 2011; Slay & Smith, 2011). Understanding the components of an individual’s overall identity provides a unique exploration of the driving forces behind an individual’s decision making, behaviour and experiences (Schwartz et al., 2011; Yuval-Davis & Kaptani, 2009). The relationship between occupation/profession and identities explains the significance of ‘what we do’ for our sense of ‘who we are’ (Kenny, Whittle, & Willmott, 2011).

2.5.1 Importance of professional identity
The definitions and interpretations of professional identity in the extant literature are contested (Dobrow & Higgins, 2005; Sutherland & Markauskaite, 2012). Professional identity can be defined as one’s self as perceived in relation to a profession and to one’s membership of it. Professional identity is created through one’s beliefs and attitudes, values, motives and experiences through which individuals define themselves, in their current or anticipated professional life (Bridges, Macklin, & Trede, 2012; Johnson, Cowin, Wilson, & Young, 2012; Sutherland & Markauskaite, 2012; Schwartz et al., 2011). Similarly, other definitions are offered in which professional identity relies on the process of socialisation (Ibarra, 1999; Schein, 1978). Professional identity draws upon social identity theory.
Professional identity has two interconnected components: the interpersonal which relates to the culture, knowledge, skills, values and beliefs of a profession that the individual has acquired; and the intrapersonal which considers the individual’s perception of themselves in the context of their profession. Professional identity facilitates gathering and understanding the knowledge and skills associated with professional work as well as the values and dispositions of professions (Sutherland & Markauskaite, 2012). Professional identity can be understood as a socialisation process in which an individual creates a “self-image which permits feelings of..."
personal adequacy and satisfaction and autonomy in the interpretation and performance of the expected role” (White & Ewan, 1997, p. 190). Jemielniak (2008) argued that identities based on group membership are utilised for implementing forms of control through a standardised identity. This idea is supported by identity research which indicates that “identification addresses various self-related needs and is associated with a variety of salutary individual and organisational outcomes” (Ashforth, Harrison, & Corley, 2008, p. 360). A strong, self-selected, positive and flexible professional identity has been shown to influence an individual’s occupational/professional success and satisfaction (Skorikov & Vondracek, 2011). Cowin, Johnson, Wilson, and Borgese (2013) observed that nurses who had formed a strong professional identity were more productive and committed to the health industry, and that this is beneficial to other healthcare workers and patients. A weak professional identity has been linked to students leaving nursing programs and graduates’ leaving the nursing profession (Worthington, Salamonson, Weaver, & Cleary, 2013).

Positive and negative impacts of a strong professional identity for professional groups can be identified. The strength of a professional identity impacts the value add that the profession has for an organisation (Kim, et al., 2012). A strong professional identity is also likely to contribute to an increase in productivity of the professional. However, the weakness associated with a strong professional identity is that professionals may be unable to effectively interact with others outside their professional group because of identity threat (Molleman & Rink, 2015). For example, within the ICT industry a fragmentation exists between the various subdivisions of roles in the ICT industry as well as with other industry professionals. Software engineers have not infrequently used exclusionary behaviours to separate
themselves from computer science professionals and member of the ICT profession as a whole are seen as difficult to communicate with because of their use ICT language and technical jargon (Denning, 2001).

Professional identity has been commonly drawn upon to examine workforce problems (Bridges, Macklin, & Trede, 2012). It is also likely to be useful to understand the ICT industry and the issues regarding its ability to attract a qualified and experienced workforce. A distinct sense of occupational/professional identity is linked to individuals’ making informed career decisions (Skorikov & Vondracek, 2011). Therefore, understanding professional identity is important to explain “why people think about their environments the way they do and why people do what they do in those environments” (Ashforth et al., 2008, p. 334).

Professional identities can alter as a result of a change in situation and/or individual perception (Buche, 2008; Sutherland & Markauskaite, 2012). There has been a substantial amount of professional identity research focusing on nursing (e.g. Hallam, 2000; Johnson et al., 2012; Kirpal, 2004) and the education professions (DeCorse & Vogtle, 1997; Gee, 2000). Like the ICT industry, the nursing literature identifies concerns with creating a sustainable, high functioning nursing profession which can respond to the ever-changing demands of the health care industry. Professional identity has been identified as fundamental to nursing practice in order to improve recruitment and stabilise the nursing workforce (Cowin et al., 2013; Worthington et al., 2013).

Particularly in the UK, USA and Australia, the education profession has also undergone significant changes as a result of continuous education reforms. These reforms have resulted in changes in work conditions and the expectations of teachers.
Such change has led to a struggle for the teaching profession to continually re-create its professional identity (Sachs, 2001).

### 2.5.2 Status and esteem

Social identity theory (Tajfel, 1978) which professional identity draws upon highlights the primary motivation behind identifying with a group is to enhance one’s pride and self-esteem. A strong sense of occupational/professional identity is positively associated with individuals’ feeling a strong sense of self-esteem (Skorikov & Vondracek, 2011). Identity research has found that a sense of professional status and esteem was the most valued incentives for the teaching (Fuller, Goodwyn, & Francis-Brophy, 2013) and nursing professions (Allgood, O'Rourke, Vanderslice, & Hardy, 2000). Professional identity research focusing on the education industry has identified that professional identity is dependant not only on an individual’s knowledge of a profession, but equally important on the confidence to successfully undertake a particular professional role (Sachs, 2001). This observation has particular applicability to the ICT workforce. For example, individuals who may lack confidence in their technical ability may also be likely to have challenges with forming a professional identity. A professional identity also allows an individual the opportunity to gain increased socioeconomic status (Baldry & Marks, 2009). Therefore, the ability to gain increased socioeconomic status by working in the ICT profession may be an attraction to those seeking a career in the industry.

### 2.5.3 Sense of belonging and attachment

An individual may experience a sense of belonging and attachment through the construction of a professional identity as a result of their group membership (Ashforth & Mael, 1989). The strength of an occupational or professional identity is
linked to the strength of belonging and attachment which have a positive impact on career success (Slay & Smith, 2011). For example, existing research indicates that individuals who have a high level of similarity with other group members have higher levels of satisfaction and perception of the profession (Brooks et al., 2011). Strong feelings of attraction and attachment are experienced when individuals naturally identify with others whom they perceive as similar to themselves (Kenny et al., 2011). Research undertaken by Khapova, Arthur, Wilderom, & Svensson (2007) identified that an employee’s sense of belonging and attachment is more likely to be more closely associated with their core profession than the organisation because the complexity that exists in organisations that make it challenging for an employee to feel a sense of connection with the organisation. Because of the highly dynamic nature of the ICT work environment and the ICT profession being largely male dominated it may be challenging for some females to feel a sense of belonging when seeking a career in the ICT industry.

2.5.4 Mastery
A strong professional identity assists professionals with developing their own mastery of the profession (Niemi & Paasivaara, 2007). Professional mastery leads to increased employability for individuals and is established as a result of an individual’s tertiary studies, workplace experience and their personal commitment to the job (Mann, 2008). Professional roles are characterised as autonomous in nature (Kyriakidou, 2012) and this aspect makes working as a professional attractive to an individual. White and Ewan (1997) argue that a sense of autonomy is expected to be experienced as part of an individual’s perception of their professional role. Other factors associated with professional mastery are self-efficacy and occupational commitment and control (Hofman, Helms-Lorenz, Beijaard, Buitink, & Caninus,
Self-efficacy and an individual’s occupational commitment are an important element of professional identity as they provide a personal perspective on how an individual views themselves as a professional (Hofman et al., 2012). The autonomy and innovation associated with ICT work is attractive to professionals working in the ICT industry (Marks & Huzzard, 2010).

2.5.5 ICT professional identity
ICT professionals are characterised as knowledge workers who perform their role in a highly dynamic and technical work environment (Jemielniak & Marks, 2012). Despite ICT work being highly technical in nature it is because of its strong service orientation that the ICT profession such as software engineering is more aligned to professions such as nursing, law and medical physicians rather than to scientific or research professions (Freund, 2015). The combination of the ICT profession being defined as highly technical, requiring intellectual autonomy and being able to provide a greater good to the community may be an attractive to individuals seeking a career in the ICT industry. However, as technology and technology expertise is gendered ‘male’ and the ICT profession has a white male image (Vitore & Gil-Juárez, 2015) this may present challenges for individuals who do not match this image.

2.6 SELF-INTEREST
Self-interest is understood in this research in relation to the set of structural opportunities and constraints that an individual perceives they will encounter through specific educational or career action. Adam Smith’s notion of the pursuit of self-interest dates back to the sixteenth century and shaped the foundation of the market economy. Smith (1910) describes the pursuit of self-interest as being fundamental to work: "It is not from the benevolence of the butcher, the brewer or the baker that we
expect our dinner, but from their regard to their own self-interest." Self-interest is commonly defined as “the explicit concern for the wants and needs of the individual” (Hsu, 2011, p. 1255). The Absolutist understands self-interest as individuals’ wishing only to pursue only their interest without consideration of other’s interest and the main achievement is pleasure. The instrumental perspective understands self-interest as using another’s interest to achieve personal gain (Rocha & Ghoshal, 2006). The instrumental perspective is used in this thesis because an individual’s orientation towards a career is influenced by the groups to which they belong, by their parents and peers as well as the notion of a greater social good that exists because of the everyday reliance on ICT.

It has been advanced that individuals are strongly governed by self-interest (Gerbasi & Prentice, 2013). However, the complexity of self-interest in social relations is the result of the compromises and other directed considerations one has to navigate through in the pursuit of their interests (Barbalet, 2012). It is understood that an individual’s action may in fact be self-interest illusion or parochialism self-interest (Baron, 2001). ‘Self-interest illusion’ encourages cooperation, and is defined and explained as the illusion of morality in which people sacrifice on behalf of others, exemplified by the scenario that “My cooperation helps people who are X. I am X. Therefore it helps me” (Baron, 2001, p. 284). ‘Parochialism self-interest’ suggests that an individual may favour a group that includes them, at the expense of outsiders and even at the expense of their own self-interest (Baron, 2001). It relates to people going beyond their self-interest in order to act on behalf of their group (Baron, 2012). This illustrates a link between professional identity and self-interest because individuals may exercise different forms of self-interest based on the strength of their professional identity.
2.6.1 Importance of self-interest

Self-interest plays an important role in the decision making process as psychological egoism theory indicates that human beings are always motivated by self-interest (Hsu, 2011). Although self-interest remains central to economic studies (Murtaza, 2011) this concept has largely been ignored by traditional sociological studies due to the complexity involved with measuring and discussing self-interest. Such ignorance stems from a large amount of scepticism surrounding its importance. Despite the earlier work of Karl Marx (1970), Max Weber (1978) and Georg Simmel (1971) in defining multifaceted notions of self-interest it continues to be largely absent from sociological discussion (Barbalet, 2012). The absence of self-interest in sociology research appears to be influenced by functionalist theorists such as Talcott Parson’s theories addressing professions and social structure, which suggest that professions became highly developed, segregated and distinguished not because of an individual’s self-interest but as a result of institutionalisation (Barbalet, 2012). Because of the emergence of rational choice theory and the social revolution, self-interest is viewed as being significant in influencing an individual’s motivation and identity (Barbalet, 2012; Jenkins & Delbridge, 2010; Webb, 2006). Therefore, self-interest lends itself to being a valuable concept in understanding an individual’s career decisions.

2.6.2 Terms and conditions of employment

The terms and conditions of employment are influential in decisions to pursue certain careers. These include a high income (Hansen & Zhou, 2007). The status attached to a profession allows for a high income for performing the professional duties. Studies of work and organisation investigating self-interest found that work-life benefits increase employees’ attachment and commitment to organisations (Casper & Harris,
Quality of work life refers to the “overall quality of human experiences in the workplace” (Schermerhorn et al., 2014, p. 455) and has been identified as a significant motivational driver for career decisions. Rehman and Roomi (2012) note that work-life balance for women entrepreneurs plays an important factor in their career decisions because of family responsibilities. Flexible work arrangements such as fluid commencement and/or completion times to accommodate personal or family commitments; flexible work location, for example, working from home instead of the office; and flexible work patterns such as working longer days to provide for a shorter working week (Department of Industry and Science, 2015) are all potentially important drivers impacting an individual’s career decisions.

### 2.7 RELATIONSHIP BETWEEN PROFESSIONAL IDENTITY AND SELF-INTEREST

The identity literature suggests that materialistic concerns arising from self-interest should be considered when understanding factors influencing individual behaviour because it is evident that employees utilise their professional identity to justify their behaviour (Jenkins & Delbridge, 2010). Both professional identity and self-interest as constructs assist with understanding an individual’s personal and professional biography which consists of “past memories and future anticipations, habits, feelings, forms of knowledge and expectations, which gives us a sense of uniqueness and simultaneously connects us to all others” (Webb, 2004, p. 16). Professional biography also refers to an individual’s education and work experience. Within this research, professional identity assists with investigating the symbolic influencing resources and self-interest assists with exploring the structural opportunities and constraints. The outcome of using both constructs assists with understanding a person’s motivation to pursue a career in a profession.
Ackroyd and Thompson (1999) suggest that interests and identities reciprocally and discursively form one another. The interconnection between identity and self-interest is also supported by Reicher and Hopkins who argue that “identity provides the norms and the values which determine what is valuable to the subject (in other words, what is in their self-interest)” (2001, p. 77). The relationship between identity and self-interest is explained by researchers as identity formation and is also referred to as ‘identity work’. Identification occurs when individuals align their interests with others. In essence materialistic concerns impact the way identities are constructed rather than identities being formed as a result of discourse (Jenkins & Delbridge, 2010). The interaction between self-interest and professional identity is conceptualised as “the pursuit, appropriation and defence of symbolic and material resources” (Marks & Thompson, 2010, p. 324). Self-interest influences an individual’s pursuit of a profession due to the material (economic and social) benefits to be gained. The perceived elite, intellectual status and high remuneration may stimulate the self-interest to be gained from a professional career in the ICT industry.

The view that self-interest should be considered along with professional identity in understanding what influences an individual’s decision about a particular profession can be drawn from the interaction that professional identity and self-interest have in forming the second dimension of the psychological contract that exists for professionals. The first dimension of the psychological contract is between the employee and the organisation. The second dimension is between the profession and the organisation. The employment relationship provides benefits an individual and organisation based on the individual’s perception of their professional obligations and defined by professional ideologies. This can be viewed as an outcome of professional identity and self-interest working together (Bunderson,
2001). For example, the social closure that is created by professional bodies allows for individuals to gain desired employment opportunities and acquire material resources such as occupational earnings (Ashcraft, 2012). This illustrates how professional identity and self-interest work together to guide human behaviour in the labour market.

The mixed method research undertaken by Scholarios and Marks (2007) examined organisational and professional identity of software programmers providing evidence of the value of understanding the interaction between professional identity and self-interest amongst employees already working in the ICT industry. Findings from the study suggest that there were extreme levels of elitism in the sector as there is a hierarchal system based on education and qualifications. A high level of professional identity was important to all research participants as it was associated with being privileged. Professional identity invokes a process of impression management and self-interest provides a degree of cultural currency. The ICT workers’ values and practices were aligned more with the profession’s identity than with the organisation’s identity (Scholarios & Marks, 2007). Although self-interest is rarely mentioned alongside professional identity in research, it is evident that it influences behaviour and requires consideration to understand an individual’s motivation towards a particular career.

2.8 SUMMARY

Government and industry bodies identify three main issues that continue to impact the ICT workforce: a skills deficit; an applicant deficit and a graduate job deficit. A skills deficit exists because businesses continue to raise their inability to locate applicants who have specific skills and are work ready to fill vacancies and an applicant deficit exists because people are deciding to pursue a career in other
industries. The inability of ICT graduates to gain employment in the ICT industry after completing their tertiary studies results in a graduate jobs deficit. Government and industry bodies continue to suggest initiatives that focus on building an individual’s skill and experience for the ICT profession. For example, updating the tertiary curricula and introducing a one year graduate traineeship. Other initiatives continue to focus on counteracting the negative perception that the ICT industry is ‘geeky’, ‘nerdy’ and ‘boring’ through the use of various promotional activities and mentoring programs.

Exploring early career ICT professionals’ motivations and decisions through the lens of professional identity and self-interest facilitates a deeper understanding of career choices in relation to the ICT industry. Such choices are dependent upon personal circumstances including professional and personal biographies. Chapter 3 will discuss the research design and methodology used to explore the employment motivations and expectations of ICT students through the exploration of professional identity and self-interest.
Chapter 3: Methodology

3.1 INTRODUCTION

Chapter 2 explored career-related matters perceived as impacting the attraction of capable and engaged individuals to the ICT industry. It was argued that the constructs of professional identity and self-interest provide a useful lens through which employment motivations and expectations of a career in the ICT industry can be understood.

This chapter articulates the conceptual framework, research design and methodology utilised to answer the overarching research question *How do professional identity and self-interest influence intentions to pursue a professional career in the ICT industry?* The research aim and critical realist research paradigm is discussed in Section 3.3 and the selection of a qualitative method of enquiry justified. Section 3.3 also identifies the sampling strategy and frame, describes participant demographics and justifies the validity and reliability of the research methodology. Section 3.4 discusses the data collection protocols and methods as well as providing evidence of the adherence to Queensland University of Technology (QUT) Human Research Ethics Committee guidelines. Section 3.5 discusses the analysis performed on the data collected.

3.2 CONCEPTUAL FRAMEWORK

A synthesis of the professional identity and self-interest literature and its impact on career intention is illustrated in the conceptual framework represented in Figure 3.1. This framework will be used to examine what motivates ICT students to pursue a
professional ICT career and the influence of personal and professional biographies in these decisions.

The conceptual framework allows for exploring how an individual’s perception of an ICT career is shaped. Sociocultural factors and individual characteristics which constitute an individual’s personal biography, influence whether the individual will decide to pursue a professional career in an industry. This is moderated by professional identity and self-interest (Hatmaker, 2013; Lewis, 2004; Webb, 2006). For example, extant research indicates that the low participation rate of women in the ICT industry is a direct result of sociocultural influences and individual characteristics (Trauth, 2002) and in addition to this social identity theorists indicate that respect must be experienced by each individual in the group to attract and maintain an individual’s connection to a group (Tyler & Blader, 2001).

An individual’s post-secondary educational experience and work history impact their decision to pursue a professional career and this is qualified by an
individual’s understanding, beliefs and attitudes towards the profession (Sweitzer, 2008). For example, a student who undertakes a law degree may develop a perception of the practice of law and the legal profession through various educational, employment and life experiences relevant to the legal profession. The perception that the student has of the legal profession influences the likelihood of the student’s pursuing a professional career in the legal sector (Field et al., 2013). Thus, an individual is attracted to pursue a career in an industry if the profession is able to provide the individual with the desired workplace incentives and image that an individual considers of value, based on their individual preferences, sociocultural factors and their exiting education and work experience.

The motivation for early career professionals to pursue a career is linked with professional identity (Buche, 2008; Dobrow & Higgins, 2005; Johnson et al., 2012; Khapova et al., 2007) and self-interest (Scholarios & Marks, 2007). The ICT industry is perceived by some as having an elite professional identity because it has intellectual symbolic status and provides generous material rewards (Scholarios & Marks, 2007). However, there is a continual struggle for the ICT industry to be viewed as a profession and to agree on what roles constitute the ICT profession (Denning, 2001; Denning & Frailey, 2011). The inability to gain professional status impacts an individual’s perception of the gains that can be achieved by pursing an ICT career.

3.3 RESEARCH DESIGN

Although professional identity and self-interest have been investigated individually in a variety of domains (Baron, 2001; e.g. DeCorse & Vogtle, 1997; Dobrow & Higgins, 2005; Eatough & Tomkins, 2014; Kim, 2014; Murtaza, 2011), there is little research exploring the interaction between the two constructs and their combined
influence on employment motivations and expectations (Jenkins & Delbridge, 2010; Marks & Thompson, 2010). Professional identity and self-interest are fluid constructs that are not easily defined. The difficulty in defining the term ‘identity’ results from the construct’s being informed by different disciplinary and ontological perspectives (Jenkins & Delbridge, 2010). The use of a qualitative approach in this research is appropriate in view of the complex nature of identity studies (Eatough & Tomkins, 2014; Schwartz et al., 2011; Tyler & Blader, 2001; Worthington et al., 2013) and self-interest (Kim, 2014). As qualitative research is an inductive style of research it allows for an in-depth understanding of an individual’s perceptions and experience (Creswell, 2013; Hunt, 2014). Following Parker and Merrylees (2002) a biographical approach was utilised with students, to understand their career choices and the influences on them with respect to professional identity and self-interest in particular.

3.3.1 Research questions and objectives

The aim of this research is to understand student career motivations and expectations through an exploration of professional identity and self-interest. Figure 3.2 outlines the research questions that drive this research.
This research has adopted a critical realist ontology (Bhaskar, Collier, Lawson, Norrie, & Archer, 2013) which suggests that there is a real world that exists independently of our perceptions, theories, and constructions while accepting that our understanding of this world is inevitably a construction from our own perspectives and standpoint (Maxwell, 2012). A critical realist ontology is appropriate for this research as it is oriented towards capturing an individual’s viewpoint of a career in the ICT industry.

### 3.3.2 Sampling strategy and frame

A purposeful sampling strategy (Creswell, 2013; Patton, 2014) was adopted. A sampling frame of domestic and international students undertaking tertiary study toward an ICT related qualification at a South East Queensland TAFE or university was applied. Targeting ICT TAFE and university students provided information about the motivations and expectations of the emerging ICT workforce. The sample
included respondents who had or are working in the ICT industry in roles such as networking specialist, software programmer, game designer, project manager and ICT consultant and respondents with no prior ICT work experience.

Initial interest was received from 124 potential participants (63 TAFE students and 61 university students) (see Table 3.1). For various reasons some of the ICT students that were originally interested were unable to undertake an interview. Therefore, the data for the analysis was drawn from a final sample of 52 respondents. Tertiary students studying an ICT related qualification were selected as the sample population as they are representative of both the emerging ICT workforce and of individuals committed to pursuing an ICT career. Because diploma and professional certifications are becoming increasingly more acceptable for entrance into the ICT industry (Denning & Frailey, 2011) both TAFE and university students were included in the sampling frame to access the view of a variety of early ICT career professionals.

The age of the respondent was not considered to be a defining characteristic of potential respondents because entry into the ICT industry is not dependent upon the age of the applicant. Similarly whether the respondent was a domestic student or international student was not a specific factor for the sample population given the mobility of the ICT workforce.

Table 3.1

<table>
<thead>
<tr>
<th>TAFE Students</th>
<th>University Students</th>
<th>Total Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interested</td>
<td>Interviewed</td>
<td>Interested</td>
</tr>
<tr>
<td>11</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Male</td>
<td>30</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>31</td>
</tr>
</tbody>
</table>

 participant Summary
3.3.3 Respondent demographic information

Fifty-two ICT tertiary students participated in the interviews. Thirteen respondents were female (25%) and 39 were male (75%) (see Table 3.2). This split closely resemble the participation rates in professional roles in the ICT industry in Australia (ACS, 2015). The age range for TAFE students was 17-36 years; the median age was 20.86 years and the mode 19 years. The age range for university respondents was 18-53 years; the median age was 25.93 years and the mode 19 years. The majority of university student respondents (24 out of 52) were completing an ICT bachelor degree at university (seven female and 17 male respondents) and mostly TAFE respondents were completing a diploma (four female and 18 male respondents). Very few university student respondents were either completing an ICT postgraduate degree (two female and two male respondents), or ICT graduate certificate (two male respondents). A small number of respondents (two TAFE and nine university respondents) were working in the ICT industry at the time of interviews and six TAFE respondents had previously performed paid or unpaid ICT related work (one female and five male respondents). A sizeable portion of university respondents had previous work experience in the ICT industry. Table 3.2 and Table 3.3 describe respondents based on their gender and based on the type of tertiary institution attended.
### Table 3.2

TAFE Respondent Details

<table>
<thead>
<tr>
<th>Male Respondents</th>
<th>ICT Study Area</th>
<th>Female Respondents</th>
<th>ICT Study Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adrian</td>
<td>Networking</td>
<td>Barbara</td>
<td>Digital Media</td>
</tr>
<tr>
<td>Arthur</td>
<td>Networking</td>
<td>Elle</td>
<td>Web technology</td>
</tr>
<tr>
<td>Bentley</td>
<td>Networking</td>
<td>Eve</td>
<td>Networking</td>
</tr>
<tr>
<td>Brent</td>
<td>Networking</td>
<td>Kym</td>
<td>Website Development</td>
</tr>
<tr>
<td>Edward</td>
<td>Networking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fred</td>
<td>Networking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garry</td>
<td>Digital Media</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Igor</td>
<td>Gaming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>James</td>
<td>Networking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kenny</td>
<td>Screen and media</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kevin</td>
<td>Website Development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liam</td>
<td>Website Development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luke</td>
<td>Website Development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nathan</td>
<td>Networking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Newton</td>
<td>Networking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owen</td>
<td>Website Development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ronald</td>
<td>Networking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stephen</td>
<td>Networking</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>22</strong></td>
</tr>
</tbody>
</table>
Table 3.3
University Respondent Details

<table>
<thead>
<tr>
<th>Male Respondents</th>
<th>ICT Study Area</th>
<th>Female Respondents</th>
<th>ICT Study Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondent</td>
<td></td>
<td>Respondent</td>
<td></td>
</tr>
<tr>
<td>Adam</td>
<td>IT</td>
<td>Beatrice</td>
<td>IT</td>
</tr>
<tr>
<td>Alan</td>
<td>IT</td>
<td>Elisa</td>
<td>IT</td>
</tr>
<tr>
<td>Bevan</td>
<td>Gaming</td>
<td>Kathryn</td>
<td>IS</td>
</tr>
<tr>
<td>Chris</td>
<td>IT</td>
<td>Lisa</td>
<td>IT</td>
</tr>
<tr>
<td>Daniel</td>
<td>Gaming</td>
<td>Rose</td>
<td>IT</td>
</tr>
<tr>
<td>Effron</td>
<td>BPM(^3)</td>
<td>Sally</td>
<td>IT</td>
</tr>
<tr>
<td>George</td>
<td>BPM</td>
<td>Zoe</td>
<td>IS</td>
</tr>
<tr>
<td>Guy</td>
<td>IT</td>
<td>Kerry</td>
<td>CSM(^6)</td>
</tr>
<tr>
<td>Harry</td>
<td>IT</td>
<td>Lily</td>
<td>CSM</td>
</tr>
<tr>
<td>Henry</td>
<td>IT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ian</td>
<td>IT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jason</td>
<td>IT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jorge</td>
<td>IT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lewis</td>
<td>IS(^7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lory</td>
<td>Gaming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marquez</td>
<td>IT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Michael</td>
<td>IT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simon</td>
<td>IT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valentino</td>
<td>IT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>William</td>
<td>Gaming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Willis</td>
<td>IT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Students: 30

3.3.4 Verification

Trustworthiness of this qualitative research design was achieved through its satisfying the four criteria of credibility, transferability, dependability and confirmability (Guba & Lincoln, 1994). Credibility is achieved by establishing strong confidence in the accuracy of findings through triangulation by the use of inter-coder reliability and peer debriefing. Various sources of evidence were utilised to achieve triangulation (Yin, 2011). For example, monthly meetings were held with supervisors to confirm the reliability of the themes selected and as one data collection instrument was utilised observations were recorded on interview field.

\(^4\) IT: Information Technology
\(^3\) BPM: Business Process Management
\(^6\) CSM: Corporate Systems Management
\(^7\) IS: Information Systems
notes that included “the description of events, behaviours and activities” (Bell, Morrison, Manion, & Cohen, 2013, p. 466) to augment the transcripts.

Transferability was accomplished by documenting in detail how conclusions are drawn to allow this research to be applied to other groups, contexts and settings. A spreadsheet was created that listed the categories, themes, and associated quotes together with a PowerPoint presentation that was delivered to the supervisors and academic peers that outlined the findings, and in particular what the researcher expected to see, what was absent from the data, what was expected but wasn’t seen in the data and the contradictions found in the data. Utilising an external audit of the analysis and findings allowed for dependability to be accomplished. Confirmability was achieved for this research by an audit trail and the research utilised a reflexivity journal to describe any influences that may impact the researcher’s analysis and decision making (Krefting, 1991; Qualitative Research Guidelines Project, 2014; Shenton, 2004). A reflexivity journal was used during the data analysis phase to capture the researcher’s position, preconceptions and current experiences that might influence the researcher’s biases (Malterud, 2001).

3.4 DATA COLLECTION METHOD

Data was collected using semi-structured face-to-face interviews. Semi-structured interviews are defined as a “construction site of knowledge” (Kvale, 1996: p. 2) which allows for an inductive style of research centred on individual meaning (Corbin & Strauss, 2008; Marshall & Rossman, 2011). A semi-structured interview was selected as it allows the researcher to “explore a few general topics to help uncover the participant’s views but otherwise respects the way the participant frames and structures the responses” (Marshall & Rossman, 2011). Semi-structured interviews are useful “when the researcher is not aware of what she [sic] does not
know and relies on the respondents to tell her [sic]” (Cohen, Manion, & Morrison, 2011, p. 412). The benefits associated with semi-structured face-to-face interviews is that they allow for in-depth analysis, validity checks and triangulation. Respondents experience spontaneous opportunities to share their experiences (Creswell, 2013; Marshall & Rossman, 2011) as they participate in a “conversation with a purpose” (Kahn & Cannell, 1957, p. 149). It was important that the participants were able to describe complex situations, elaborate or clarify questions (Corbin & Strauss, 2008). The interviews explored respondent’s feelings, attitudes and beliefs, motivations, perceptions and expectations (Marshall & Rossman, 2011) regarding a career in the ICT industry. The weaknesses associated with using interviews as identified by Perry (2013) such as that the results may be biased and not suitable for theory testing were well considered before selecting this method of data collection.

Mitigation strategies were implemented to manage any challenges associated with using semi-structured interviews. For example, the possible misinterpretations due to cultural differences when interviewing international students were minimised by the researcher’s being patient and utilising simplified jargon-free language if necessary to communicate with the respondent. Building a rapport with the respondents (Perry, 2013) and showing gratitude for their participation were strategies implemented at the beginning of the interview to ensure the participants were able to provide open and honest responses. Such strategies facilitated full cooperation of participants particularly as the female researcher was also aware her gender may have influenced how participants responded to questions (Burgess, 1984; Marshall & Rossman, 2011).
3.4.1 Data collection protocols

Approval was obtained from the ICT course co-ordinators at the selected tertiary institutions before attending relevant classes to seek interest from students to participate in the research. A brief five minute overview of the research was delivered to the classes by the researcher. Interested students were provided with a flyer that contained detailed information about the research and a form to record their contact details which was returned to the researcher at this time. The interested students were then contacted individually by email to arrange a mutually convenient interview time. The ICT course co-ordinators were not provided a list of students that had agreed to participate in the research. The interviews were conducted at the student’s campus in a public area. Each interview was audio recorded and transcribed verbatim. Transcripts were thoroughly checked for any inaccuracies to increase the validity of the findings (Bell et al., 2013).

Before the interviews commenced, all participants signed a consent form to adhere to QUT Human Research Ethics Committee guidelines (QUT, 2014). The interview protocols were discussed with each participant, to provide the rules that guide the implementation of the interviews (Boyce, 2006; Creswell, 2013). The duration of each interview was approximately one hour. A small token of appreciation in the form of a chocolate bar was provided to each participant at the completion of their interview. Given the time constraints of the academic calendar data collection was completed over two consecutive semesters. The data collection commenced in July 2013 and was completed in May 2014. Interview field notes were completed to capture the participant’s behaviour and any other important data that cannot be captured by the voice recorder.
3.4.2 Interview guide

The interviews employed an interview guide that contained a list of topics and questions to explore work and education, career plans and family and peers perceptions about the industry. For each of these areas past experiences, present situation and expectations for the future were discussed. The list of topics and questions were not provided to participants beforehand to eliminate possible rehearsing of answers. Minor changes were made to the interview guide following pilot interviews to include additional questions that further probed the professional identity construct. Such changes are common with effective qualitative research (Creswell, 2013).

The interviews commenced with demographic questions to gather data about the participant’s personal and professional biography (Marshall & Rossman, 2011). Diverse questioning techniques were used, including introducing, structuring probing, specifying, and open-ended questions (Kvale, 1996). Various questioning techniques were implemented to increase the credibility of the data collection (Krefting, 1991). Rephrasing responses assisted with clarifying participant’s responses. Additional interview strategies such as utilising a poker face after participants provided their responses ensured that as far as possible the researcher did not influence the participant’s responses and remained non-judgemental.

3.4.3 Ethics

Ethics approval for this project (No. 1200000698) was granted as part of the broader Young People and Work Project. The information sheet, the consent form, presentation to the ICT lectures and follow up email correspondence with the interested students ensured informed consent was given by participants (Cohen et al., 2011; Guest, Namey, & Mitchell, 2013). It was understood that the participants were
volunteers and they were reminded that if at any time they felt uncomfortable with participating in the interview they were able to withdraw their interest.

All of the data captured was stored in a secure location and participant pseudonyms were used to ensure a high standard of compliance to the QUT Human Research Ethics Committee guidelines (QUT, 2014). The field notes were detailed and nonjudgmental (Creswell, 2013; Marshall & Rossman, 2011) because interviews can be unpredictable the interviewee’s position, locations and experiences should be captured to consider possible areas of difference and similarities (Love, 2012). Before the interviews commenced students were informed that if they felt uncomfortable with any of the questions the researcher would move onto the next question. Participants were reassured that the information that they shared was confidential. Continuous reflection and constant correction throughout the data collection phases was performed to ensure information recorded was accurate and adhered to the ethical guidelines (Parsell, Ambler, & Jacenik-Trawoger, 2014).

3.5 DATA ANALYSIS

Marks and Thompson (2010) definition of professional identity and self-interest was used as a starting point for the data analysis. The data analysis occurred in three phases: emergent themes were identified from the individual transcripts; respondent experiences were clustered by topic and evaluated at group-level similarities and differences; and finally results were used to address the research questions (Creswell, 2013). Nvivo software was used to organize and sort data and to search for themes (Creswell, 2013). The types of first cycle coding undertaken include open coding, emotion coding and versus coding (Saldaña, 2012). Axial coding a second cycle coding method was used to disaggregate core codes such as categories and themes within the data collected from respondents (Babbie, 2013). This form of coding
assists with relating categories to themes to reconnect fractured data that occurred during first cycle coding to give coherence to the emerging analysis (Charmaz, 2006). Figure 3.3 displays the aggregate data structure that emerged during the analysis. The thematic content that forms the child nodes are status and esteem, sense of belonging and attachment, mastery, terms and conditions of employment and opportunities and benefits. These themes are then rolled up into the parent nodes of professional identity and self-interest.

**Figure 3.3 Aggregate Data Structure**
3.6 SUMMARY

This chapter discussed the importance of utilising a critical realist ontology and qualitative research methodology to effectively achieve the research aim of understanding student career motivations and expectations through the exploration of professional identity and self-interest. The next chapter (Chapter 4) will present the results from the data analysis undertaken as part of this research.
Chapter 4: Results

4.1 INTRODUCTION

Building on the research methodology presented in Chapter 3, this chapter presents the research findings. It commences by examining the importance of professional identity in influencing career decisions (Section 4.2). These are discussed in relation to three themes raised in the interviews: status and esteem; sense of belonging and attachment; and mastery. Section 4.3 describes the central themes identified during the analysis associated with the influence of self-interest on career decisions. The two themes of terms and conditions of employment and employment opportunities and benefits relate to both economic and social self-interests respectively. The final section (Section 4.4) illustrates how professional identity and self-interest work together to influence career intentions.

4.2 PROFESSIONAL IDENTITY

As discussed in Chapter 2, professional identity is a form of psychological attachment and is linked to the acquisition of symbolic resources by professionals. The development of a professional identity is influenced by modern social and economic conditions which consist of the ever changing social, economic, technological, employment and cultural contexts within everyday society (Skorikov & Vondracek, 2011). Researchers argue that the formation of a professional identity is a continual process that involves one’s understanding and examination of experiences and answers the question of ‘who I want to become’ (Clarke, Hyde, & Drennan, 2012; Sachs, 2001). Extant literature identifies occupational identity/professional identity as an important factor when understanding formative career choices because it provides an individual with an image of who they are and
what they do at work (Skorikov & Vondracek, 2011). The significant themes relating to professional identity that were discovered during the analysis of the data were status and esteem, sense of belonging and attachment and mastery.

4.2.1 Status and esteem
Social identity theory, on which professional identity is based, suggests that an individual is more likely to want to pursue group membership based on the perceived status of the group (Tajfel, 1978). Within the professional identity literature a group’s status is important as it allows for a positive distinctiveness of the group which in turn elevates an individual’s self-esteem (Hallier & Cascón-Pereira, 2012). Status is not something that an individual can develop on their own. However, most groups can gain status resources only by relying on the individuals that form the group. The ICT profession is considered to be highly skilled and well-remunerated (Courtney et al., 2009; Scholarios & Marks, 2007). It was viewed by the respondents in this research as a high status profession. Adding to empirical research undertaken by Timms et al. (2008) and McLachlan et al. (2010) this research identified the expectation of a good community image as influencing respondents’ decisions to pursue a career in the ICT industry. Respondents perceived that ICT professionals had skills that were valued by the general public and corporate organisations because ICT professional were responsible for safeguarding ICT systems that are relied upon in various aspects of everyday living. The influence of this role can be summed up in this statement by a university student respondent: “IT professionals are the reason why they [the community] can use the internet and their laptops work and they can use an iPad, for instance” (Daniel, University). ICT professionals were viewed by respondents as being extremely important in preventing “the whole thing” from breaking and shutting down whole organisations (Brent, TAFE).
Despite this importance and the ubiquity of ICT in everyday life respondents identified that “a lot of people, when you talk to them have no idea about the industry” (Barbara, TAFE). Nonetheless, respondents still believed that the general public and corporate organisations perceived the ICT profession as important. Respondents had formed an image of an ICT professional performing a large amount of problem solving based on the application of advanced technical skills. The inability of people to fully understand the work that an ICT professional performs reinforced respondent views of the uniqueness of the profession. This perception elevated the status of the ICT profession as respondents believed that not everyone had the ability or skills to complete this work, indicating that the ICT profession must be valued by the general public similarly to the engineering profession. There were some (seven) TAFE and university respondents who believed that ICT professionals were not given “the same respect” as engineering professionals (Tim, University), although this did not actively discourage them from pursuing a career in the ICT industry.

The image of an ICT professional has historically been associated with stereotypes such as ‘nerd’ (Comeau & Kemp, 2007) or ‘geek’. For example, research has found these stereotypes to negatively impact an individual’s decision to pursue a career in the ICT industry. Research completed by Draus et al. (2014) raised the concern that students may not decide to pursue a career as an ICT professional because of the fear of being labelled by others as a ‘geek’ or ‘nerd’. Both TAFE and university respondents associated working in the ICT industry with “being a nerd” (Lisa, University) and being “known for computer geeks and nerds and gamers...” (Alan, University). However, contrary to existing research the respondents did not equate being labelled a ‘geek’ or ‘nerd’ with having negative connotations; rather...
they believed that being called a ‘nerd’ was a compliment. For some respondents such as Gary, the stereotypical terms that are associated with ICT work attracted them to pursuing work in the ICT industry because an ICT professional was seen as being high intelligent and having a unique technical skillset:

For myself I don't see any negatives...It's something that I personally find is a nice thing to be said about me because I like it. I like the things that are attached with being a nerd.

Thus being labelled a ‘geek’ or ‘nerd’ attracted many respondents to a career in the ICT industry as it further supported the characteristics that they had assigned to their image of an ICT professional. Working in a profession that consisted of highly intelligent individuals would increase the respondents’ self-esteem as they valued being viewed by members of the community as being highly intelligent. The perception that entry into this professional group required a high level of intelligence increased its status.

The opinions of family and peers influenced career decisions. However, empirical research has been mostly inconclusive as to the effects families have on occupational/professional identity development because of the complexities surrounding the relationship (Skorikov & Vondracek, 2011). This research identified that the families of the vast majority of both TAFE and university respondents (50) appeared to hold the ICT industry in high regard: “Mum and Dad definitely want me to stay in it. They think the whole computer world is amazing because they're all not up with technology. So they think it's the smartest thing” (Barbara, TAFE). Respondents reported high levels of engagement to undertake a career in the ICT industry particularly from parents who shared an interest in ICT. For example, TAFE student James recalled “I had a computer from an early age because my dad was a boffin. He liked it so yeah, he's always read the computer magazines” while Stephen
(TAFE student) believed this encouragement was because “my father loves it because it means free IT support.”

The influence of peers on occupational/professional identity formation has been identified as important because of similar occupational interests and career goals (Skorikov & Vondracek, 2011). Both TAFE and university respondents spoke of being influenced to pursue a career in the ICT industry by their “friends, definitely, because a lot of them are actually in IT as well” (George, University). Respondents reported that their families and peers “could see the potential opportunities that it [working in the ICT industry] could have in the future” (Kym, TAFE). Both TAFE and university respondents were interested in achieving the professional status that their peers had achieved. For example, Edward (TAFE student) highlights that “the majority of my friends, more than 50 percent, are in professional industries already” thus he expected that obtaining a similar professional status would both increase his esteem and allow the opportunity to earn good wages. There was little evidence suggesting that respondents were pursuing a career in the ICT industry to feel a sense of belonging and attachment with their peers. Rather these decisions were associated with obtaining the status and economic benefits that they saw their family members, peers and others achieve whilst working in the ICT industry.

4.2.2 Sense of belonging and attachment
Professional identity allows an individual to feel a sense of belonging and attachment to a profession in which individuals become part of a group that has defined themselves based on characteristics of their profession. Professional identity is thus a form of social identification which “allows the perception of oneness with or belonging to a profession” (Brooks et al., 2011, p. 88). Social identification assists an
individual by partially answering the question “who am I?” and occurs if an
dividual feels a sense of belonging and attachment from group membership
(Ashforth & Mael, 1989). Jemielniak (2008) suggests that the development of
professional identity is important for providing consistency in a workforce which
experiences high levels of turnover and change as well as being associated with high
levels workplace productivity (Molleman & Rink, 2015). Within the career
development literature, professional identity has also been positively associated with
decisions to pursue a specific career (Porfeli & Patton, 2007; Skorikov & Vondracek,
2011). It could be proposed that students who are undertaking an ICT qualification
would identify strongly with the ICT industry and have a beginning sense of
professional identity.

Existing research identifies professional identity as a “community membership
where we define who we are by the familiar and the unfamiliar” and requires active
engagement of its members (Sachs, 2001, p. 154). Despite this expectation, analysis
here identifies that a feeling of community and active engagement with the ICT
industry and their ICT cohort was notably absent. Some respondents believed that
because of their student status and identity it was expected that they would not feel a
sense of connectedness to the ICT profession. Respondents did not feel a sense of
belonging and attachment to the ICT industry and reported feeling “very on the
edge” of the industry (Daniel, University). Most appeared to be waiting until their
ICT qualification was achieved and they were employed in the ICT industry before
they considered themselves as an ICT professional. For TAFE students
supplementing their TAFE qualifications with a university degree appeared to be a
prerequisite for claiming this identity. Jorge, a university student, provides an
example of not being part of the ICT workforce by stating that “I haven't entered it
Both TAFE and university respondents appeared to associate more strongly with their student identity rather than their professional identity. Respondents justified their lack of a sense of belonging and attachment to the ICT industry on the basis of this identity conflict. The lack of a sense of belonging and attachment to the ICT industry extends to low participation rates in various professional organisations and had little influence on the career decisions of the respondents. For example, university student Beatrice noted that her participation in ICT programs was contingent on her student status “I'm a member of WIT - Women in IT, a student member there…. they seemed interesting and it was free, admittedly….. I'm a student”.

Pre-employment professional networking (Dobrow & Higgins, 2005; Sweitzer, 2008) and interest-group membership (Kirpal, 2004) are important in forming professional identity. However, despite respondents professing a high level of engagement with ICT-related hobbies and a commitment to pursuing an ICT career only seven of the fifty-two respondents, six university respondents and one female TAFE respondent, were members of professional organisations. There was a lack of consensus regarding the benefits or value in joining such agencies/entities: “I don’t really have an idea about the benefits of it” (George, University). This perhaps indicates that being a member of a professional organisation is perceived as having little influence on employment outcomes and intentions. However, it also points to a lack of a sense of belonging and attachment to the profession as many non-participants characterised their activities as “I haven't seen the value in it…..Well, they seem to very theoretical, they don't seem to be very helpful” (Jorge, University).

Women (five) were more likely than men (two) to be members of professional organisations. This is probably because three of the five women belonged to women-
focused organisations such as WIT. There was also little interest expressed in participating in associated student societies or related activities. Only five male respondents indicated that they were members of student ICT societies.

A very small number of TAFE respondents (three) were aware that ICT professional organisations existed and despite universities holding career networking events there were (five) university respondents who were unaware of the ICT professional organisations. Others commented on the lack of proactivity of these organisations in terms of soliciting student members. Respondents had received promotional material via email but noted “I think I would know them if they actually advertised more….even I know, like accounting ones, they want you to join” (Adam, University). TAFE respondents, in contrast to university respondents, reported not receiving any such promotion material or being invited to attend networking functions. This is not to say that some respondents (both male and female) did not seek out relationships with industry professionals.

Like I feel like I go to some of the events and stuff and I talk to one or two people like in games and stuff. I don't really have any like close working connections or anything, so that is a bit of a problem. But I'm trying. (Daniel, University)

I went to one thing, and then I got a bunch of names and contacts and business cards, and I contacted some people and they just didn't contact me back, for some reason. Like, maybe they were too busy with work or something. But there was one lady from [company] that I really wanted to talk to her more, because I wanted to get into consulting at that time. But she didn't get back to me, and that just killed my motivation a bit. (Sally, University)

Perceptions of alienation amongst individuals (professionals and students) in the ICT industry may be higher than other professional groups because of the complexity of
the industry. Respondents identified a range of occupational challenges, which were largely based on stereotypes and media portrayals because they had limited industry experience with which to compare. These included anticipated communication difficulties, competitiveness to find and remain employed because of outsourcing of ICT roles, and the need to constantly upskill. Such challenges may have greater impact on women ICT professionals because they are considered a minority group in the industry (Adya, 2008b) as technology work is stereotypically associated with masculinity (Adam et al., 2006; Vitores & Gil-Juárez, 2015). For example, within this research where female participants had experienced exclusionary type behaviour in their ICT classes. Most female respondents felt that “there have been moments definitely” where they had to justify their ability in order to become a member of the ICT profession during their education and employment experiences.

I feel under pressure because normally I could - if I'm 80 per cent good at something, that's fine. I can ask for help with the other 20 per cent. Here I have to feel like I'm 100 per cent good. I have to prove at every turn that I deserve to be there. That's a little bit exhausting. (Kym, TAFE)

Similarly to empirical research completed by Adam et al. (2006) there were instances where a female respondent’s ‘femininity’ resulted in challenges during their experience in the ICT industry.

I feel like a lot of people have judged me at first, thinking, oh she looks like a real Barbie, she won't last in here - stuff like that….you shouldn't have to prove yourself, to be in the industry. If you're in there, you obviously like it. You obviously want to do it. You're somewhat good at it. (Barbara, TAFE)

Despite female TAFE and university respondents raising such challenges, most male TAFE and university respondents indicated that there was no reason for females to be treated differently from their male counterparts based on their gender differences as “You could be a male and you could go into childcare, which is...
predominantly female based…It does not matter what gender you are” (Arthur, TAFE).

Igor (TAFE student) mentioned that:

I don't really see how being a woman would change any decisions. Like I don't see how a woman cannot be in the IT industry. I don't see how that can happen. If a woman wants to be in the IT industry, that's great. If a man wants to be, that's great as well.

Despite male respondents having this viewpoint, incidents of marginalisation were raised by both male and female respondents. Compared to female respondents, male respondents were more likely to cite examples of when women had been excluded than women themselves. Ronald, a TAFE student, raised that he was “aware that women don't tend to be taken too seriously in IT. That's what I found with my IT class.” A TAFE female respondent indicated that in high school, she didn’t “think the guys in the class realised that it was more of a male dominant industry” (Barbara, TAFE) and hence demonstrated more inclusive behaviour during ICT classes. Some female respondents believed that there was less gendered exclusion in the pre-tertiary education environment because students were yet to form an image of a profession dominated by men and with inherently masculine skill sets.

Some TAFE and university male respondents associated particular roles in the ICT industry with a person’s gender.

Most females that actually do IT are mainly focused around the computer side like games development, animation, music and all that. You won't find women in the business sort of area where they're allowed to look after large company computer networks and all that. (Nathan, TAFE)

One respondent assigned roles suitable to males and females and justified his assignment based on the stereotypical characteristics that each would bring to the
different roles in the ICT industry. James (TAFE student) assigned a woman to a Helpdesk role in the ICT industry which is considered an entry level position to some because he believed “women might be a bit better at it actually” and “programming for guys would be better” because it is more technical. James further justified this statement by stating that:

Women are better at keeping track of more things at once where as I will forget things. But guys are good at ‘here's your one task, don't do anything else until it's finished’.

Wenger’s (1998) research found that identity consists of community membership where we define who we are by the familiar and unfamiliar. Some male respondents indicated that they would not pursue a career in the ICT industry if they were female, because the ICT industry is male dominated.

Facilitator:  Do you think your choices have been influenced by whether you were a man or a woman?
Interviewee:  I do, yes.
Facilitator:  So if you were a woman you would have chosen another career you think?
Interviewee:  I think so. Just IT's very male based at the moment. (Owen, TAFE)

There were some (two) female respondents who did not believe that they would face any barriers or challenges because “I don't think that” gender “has anything to do with it” (Eve, TAFE). Although, female respondents identified potential challenges to their access to and progression within the ICT industry and felt that they could overcome them and were adamant that they would not allow their gender to prevent their career success. This determination was expressed by TAFE student Kym who declared “So I always try and push it out of my mind. I don't think of myself as female…. Gender is irrelevant” (Kym, TAFE). The goal for each of the female respondents was the obtainment of a successful career in the ICT industry.
which would allow them to pursue their passion for ICT. Four female university respondents indicated that being a female was a positive factor:

   It's definitely - actually, it might have influenced me to go into it a little bit more, because I have a feeling that workplaces generally feel like, oh, we've got to have a woman in IT to show that we actually support feminists. (Lisa, University)

   Female respondents believed that workplaces would be interested in having women work for them as this would indicate that the business supports diversity in the workplace.

   The four female university respondents perceived that they would have “better job prospects, especially for women….I think, if anything, being female will help me…. That's the reason why I chose this industry, because it's male-dominated” (Sally, University). Elisa (University) explained her experience at a networking event:

   I was the only girl in the room, people from businesses would automatically jump on me. I had several companies hand me business cards and say call me, when you finish your degree.

Female respondents were not deterred by being a minority member and hence feeling a lack of a sense of belonging and attachment.

   Owen (TAFE student) identifies the ICT industry as being a male occupation. Therefore, Owen believes that selecting a career in the ICT industry for a female would result in being classified as an ‘unfamiliar’ member of the ICT industry and hence lead to being excluded. The perception was not strongly identified when discussing gender related opportunities in the ICT industry with the male respondents:

   Facilitator:  Do you think your choices have been influenced by whether
you were a man or a woman?

Interviewee: I do, yes.

Facilitator: So if you were a woman you would have chosen another career you think?

Interviewee: I think so. Just IT's very male based at the moment.

Liam, a male TAFE student, believed that the international students had to prove themselves more than the female students.

Facilitator: Do you think that the females have to justify their abilities in class?

Interviewee: No, not at all.

Facilitator: Not their technical abilities?

Interviewee: I think the international students kind of do as - more than anyone else

Workplace experience is considered an important component in assisting an individual with forming a professional identity (McNamara et al., 2011) and ensuring their commitment to a career path (Porfeli & Lee, 2012). Despite female respondents raising instances where they were excluded during their previous employment in the ICT industry this did not influence their decision to pursue another career. Zoe a university student identified several instances where a lack of a sense of belonging and attachment occurred for her in the ICT industry and yet Zoe was still pursuing a career in the industry:

Up until my job at [company name] I would say that there was favouritism towards men and - in the sense that women were excluded from meetings, that when they did speak up at meetings, their thoughts were discredited by other men speaking over them, and that ideas that they would come up with and try to present to management were completely disregarded.

Barbara a TAFE student had similar experiences while working in the ICT industry:

In training, where we were doing group activities. We had to plan out a little drawing board. I said, oh we should do obviously an Apple with a face or something - something like that. One of the guys said, no that's stupid. Then
five minutes later the guy - another guy in the group said, oh yeah, we should do this, blah, blah, which was my idea - and it got accepted. I thought, wow was that because I was a female? It seemed lame out of a female's mouth, but not so much a guy's?

Universities are under increasing pressure to allow students opportunities to be exposed to the world of work (Department of Education and Training, 2013) in order to resolve the graduate skills gap (Nixon, Walker, Robertson, Hills, & Adey, 2003). Universities seek to fill this gap by offering capstone projects, internships or practicums for students to assist them with the transition from student to professional. However, some respondents reported difficulties accessing projects or workplaces of relevance to their career aspirations.

Well, actually I was going to do my professional practice this past semester but I pulled out of it after a couple of weeks because I realised that some of the projects that they released for the students to which they could apply for professional practice, some of it was already filled by students already. (Alan, University)

Opportunities to participate in these pre-graduation professional work experience practicums are less common in the TAFE environment. Although none of the TAFE student respondents were required to participate in such activities as part of their course, they reported that their teachers highlighted the importance of obtaining work experience in the industry.

Consistent with this observation, respondents with an employment history in the ICT industry expressed a stronger connection to the ICT industry and a stronger professional identity as an emerging ICT professional. It was therefore noticeable that a sense of belonging and attachment was not an antecedent for a respondent to desire to be an ICT professional or to actively pursue a career in the ICT industry unlike that of mastery.
4.2.3 Mastery

Higher education research links graduate work readiness and successful employment outcomes with graduates who have mastery in the field that they wish to pursue (Jackson, 2014). Graduates who have developed a strong professional identity have greater success in developing mastery of a professional discipline which supports the transition from tertiary education to a profession for tertiary students (Mann, 2008; Niemi & Paasivaara, 2007). Further to research examining mastery in other professions such as ballet dancers (Wainwright, Williams, & Turner, 2005) there appeared to be an intimate connection between the self and career for most of the respondents in the sense that ICT had played a long term role in the life of respondents from an early age. Feelings of self-efficacy, job satisfaction, occupational commitment and intellectual autonomy, associated with the mastery theme, were evident in the data for both university and TAFE respondents. Mastery had a positive influence on the expectations of respondents of work in the ICT industry.

The respondents’ perception of mastery associated with working in the ICT industry is a strong influencing factor for them pursuing a career in ICT. TAFE and university respondents were embarking on a career in the ICT industry because they believed that ICT work requires intellectual autonomy; is interesting and challenging; and requires a high level of problem-solving skills. Personally satisfying work and having an interest in the job was as an intrinsic factor for career choice (Agarwala, 2008) and autonomy and creativity an attractive feature to entering the field (Marks & Huzzard, 2008).

Respondents were attracted to the ICT industry because the work was interesting and challenging and “because you always learn new things about
computers” (Barbara, TAFE) indicating expectations of high levels of job satisfaction when working in the ICT industry. There were a few (three) respondents that had decided to shift career pathways to pursue a career in the ICT industry because they felt they were not “currently being challenged enough in current industries” (Kym, TAFE). The majority (48 of the 52 respondents) expected that their skills would be continuously extended, or as one student asserted, that they would be ‘constantly problem solving’, believing “the best thing about programming is that it's one massive logic puzzle… that goes on and on” (Chris, University) especially as they need patience, creativity and intellectual ability to “slowly mould it and mould it and mould it” (Henry, University) until the end product is produced.

For most TAFE and university respondents a career in the ICT industry meant they would experience autonomy in the ICT roles they would perform. Research undertaken by Jemielniak (2012) and Buche (2008) found ICT workers likely to display higher job satisfaction when performing roles that were challenging and had a high degree of intellectual autonomy. Extending this research further, the TAFE and university respondents indicated that their attraction to working in the ICT industry resulted from the emphasis of ICT work involving intellectual autonomy because as an ICT professional you “never really see much face to face, because it’s IT” (Henry, University). Respondents perceived working as an ICT professional to allow them greater opportunities “big picture thinkers” (Zoe, University). The respondents who had experience working in the ICT industry raised intellectual autonomy as being as a positive factor with working as an ICT profession. For example, “it's very free-form so if I get up early one morning, I can just get into something I've got to get done” (Guy, University). The ability to get “more stuff done” (James, TAFE) was an outcome of being allowed intellectual autonomy when
completing work as an ICT professional. Empirical research indicates that a high
level of job control is positively linked to the well-being of ICT workers and their
engagement and commitment to an organisation (Peiró, Schaufeli, & Salanova,
2002).

Self-efficacy is a further indicator of an individual’s sense of professional
identity (Hofman et al., 2012) and is defined as the “beliefs in one’s capabilities to
organise and execute the courses of action required to produce given attainments”
(Bandura, 1997, p. 3). Research has identified that “social persuasion” plays an
important role in increasing an individual’s self-efficacy (Peiró et al., 2002, p. 21).
Female TAFE and university respondents, despite having exceptional grades such a
GPA of 6 or above, and some with work experience in the industry, still lacked self-
confidence in their ability to perform a professional ICT role. Kym (TAFE student)
for example, stated that “there are a lot of people out there who are a lot better than
me.” A low level of self-efficacy was also prevalent amongst international
respondents at TAFE despite many having completed tertiary qualifications in their
home country. Male university respondents expressed a high level of self-efficacy
when discussing work in the ICT industry:

A lot of my experience is working in call centres, training. I've done a lot of
that work. Real confident on the phone. I'm pretty sure that's what they saw
in me. They saw the confidence about using the phones, using the systems.
(Harry, University)

The confidence in finding employment after graduating was evident in male
respondents as Effron (University student) indicates "I'm not afraid because I've got
at least three years experience in that field". Self-efficacy is linked to intrinsic
motivation and commitment to an occupation (Hofman et al., 2012) and despite some
respondents having low self-efficacy their responses indicated that they remained committed to pursuing a long standing career in the ICT industry.

Work experience is identified by extant literature as ensuring greater success for student when seeking employment opportunities (Cheng, Kang, Roebuck, & Simnett, 2009). Work experience is important for individuals to allow them the opportunity to demonstrate their mastery of discipline specific knowledge, skills and abilities. Consistent with Cheng et al. (2009) study, TAFE and university respondents believed that their employability would increase if they had work experience in the ICT industry. Although, TAFE and university respondents “valued experience” in the ICT industry they believed that they should be paid for this work experience.

4.3 SELF-INTEREST

Self-interest can be understood in terms of the potential economic and social benefits that an individual believes can be acquired through a specific educational or career action. Self-interest motivates individuals to maximise material resources whilst preventing any negative impact to one’s wealth and health (Kim, 2014). Establishing a career allows an individual to “obtain a sustainable income, express personal beliefs and values and provide social connections” (Hansen & Zhou, 2007, p. 66). Organisational psychology and organisational behaviour research indicates that protecting and improving one’s self-interest is the primary motive underlying social behaviour (De Dreu & Nauta, 2009). There were two themes related to self-interest that appeared to motivate respondents to pursue a career in the ICT industry. The first was the terms and conditions of employment that respondents would receive when working in the ICT industry and the second related to the employment opportunities and benefits of working in the ICT industry.
4.3.1 Terms and conditions of employment (contractually ascribed)

Self-interest is thought to be the ultimate motivator behind all human behaviour and is associated with the perceived likelihood of maximising material resources (Kim, 2014). Hence, one primary reason for individuals pursuing a professional career is to achieve a high income (Hansen & Zhou, 2007). This research strongly supports this viewpoint as factors associated with the terms and conditions of employment that TAFE and university respondents hoped to acquire whilst working in the ICT industry significantly influenced the career decision of respondents. For example, the ability to earn high salaries in the years following graduation was attractive to TAFE and university respondents who were yet to commence a professional career and were mostly living at home with their parents and had little savings. Daniel (University) identified that because of “the hole in the games world… you could make an app that makes $1 million overnight”. Despite the majority of respondents influenced by the perceived wealth they would acquire by working as an ICT professional there appeared to be evidence of “enlightened self-interest” (Rocha & Ghoshal, 2006, p. 593), as well with respondents advising that it is “not so much the money, it's just more the need to help others…” (Arthur, TAFE) and this extends research undertaken by Adam et al. (2006) which identified ICT employees as having a high level of job satisfaction arising from opportunities to utilise their ICT skills to help others. As well as a sustainable income, respondents were also looking for a career that had flexible work arrangements which would support a work-life balance:

I want a job that's a bit less high-pressure than my parents. They're both very stressed a lot of the time. I don't want to be quite that stressed and that's kind of given me an idea of what I don't want to do. I want to be - not relaxed, I

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8 Any supposed motive seeking the wellbeing of others can be reduced to self-interest, giving rise to what is called enlightened self-interest.
want to work hard, but I just - when I finish I want to finish. (Rose, University)

Successful ICT companies such as E-Web Marketing and Google, due to their rapidly increasing profitability are able to pay large salaries to only a few valued employees and exploit those that are easily replaced (Schmerhorn et al., 2014). The overall perception of respondents was that “money is a big factor” in pursuing a career in the ICT industry (Brent, TAFE). Some respondents believed that depending on the particular field in which you worked within the ICT industry more broadly, “you can have a massive salary” (Kerry, University). Brent, a TAFE student, had a plan when commencing university to “switch courses” until he found a course that he “liked but could potentially earn the most money”. The appeal to earn “better than most of my family makes” (Fred, TAFE) was a driver for respondents as it symbolised success. Respondents were driven by their desire of liking “nice things” therefore “if it [work] was going to be low paying, no I wouldn't be here” (Valentino, University). Respondents indicated that they wanted to earn “enough money to support the lifestyle that I want to live” (Marquez, University). Most (4) male and female TAFE and university respondents who had worked in the ICT industry mentioned that the pay was an important motivating factor to continue to pursue a career in the ICT industry. Barbara a TAFE student mentioned that in the ICT industry she was able to obtain “some good savings behind me at 17, I was able to literally support myself. I was earning more than my parents at the time.”

Despite respondents’ identifying that the pay of the ICT industry was an important motivating factor in pursuing this particular career pathway, only 8 respondents reported as having gone to a substantial effort to confirm their perception that they would receive a high income when working in the ICT industry. Liam (TAFE student) reported that his career research identified that “a teacher will
normally earn $60,000 a year” and he was anticipating on receiving a higher income than this when working in the ICT industry. The respondents researched this information with their parents and career advisors during their secondary education whilst they were searching for a suitable career. Conversely, there were six TAFE respondents that indicated that they didn’t “know what the average salary” (Brent, TAFE) was because the pay was irrelevant to their pursuing a career in the industry.

TAFE respondents in particular raised that they would consider leaving their current employment in other professions to work in a lower paying ICT role “but in the future will consider trying to find a higher paying job” (Nathan, TAFE). Two mature aged respondents (TAFE and university students) reported income as being a lower priority to driving their career decisions to enter the ICT industry compared to when they were “younger, it was salary first. But now I can - I'm confident I can get a good salary in different industries. Interest is now my priority” (Kym, TAFE).

Career choice is influenced by the perception that the type of work will have a positive influence on an individual’s well-being (Hansen & Zhou, 2007). The respondents anticipated that working in the ICT industry would satisfy their desires for quality of work life. Flexible working arrangements and work-life balance are important aspects of the quality of work life (Department of Industry and Science, 2015). Adding to Marks and Huzzard (2010) research the obtainment of a career that “also supported a work-life balance” (Marquez, University) was important for most (45) TAFE and university respondents and they believed working in the ICT industry would be able to meet this obligation. Rose, a university student, was specifically looking for a career in the ICT industry as she didn’t “want to be working until late at night, bringing work home all the time.” TAFE and university respondents with
children (four) expected to “find an organisation that understands that I'm going to have to have set hours. I can't work back” (Zoe, University).

Some (six) respondents who were already working in the ICT industry and continuing their study, discussed the long and unpredictable working hours they were expected to complete. “Be prepared to work outside of hours… be prepared to be called in early hours of the morning” (Michael, University) and gave examples of situations where they “pulled back because of the hours and we had just had a baby at the time and it was getting ridiculous.” Literature identifies persistently excessive working hours and negative work–life balance as possible disincentives for deciding to pursue a career in the ICT industry (Holtgrewe, 2014). However, despite respondents who had worked in the ICT industry and experienced long and unpredictable hours, this did not appear to be a deterrent from continuing or returning to a career in the ICT industry. Beatrice, a university student, had experienced long working hours and expected this to be part of her new role:

People were sleeping in the office and that sort of thing in a big, massive proposal that they were doing and stuff like that. So I'm expecting it to be a bit crazy, but I think if it wasn't crazy, if it didn't have the variety, I wouldn't be interested. Plus with my current job too, I am required to be on call on the weekends once every few weeks, as per my roster. So I'm sort of used to not having that set 9:00 to 5:00.

Both TAFE and university respondents anticipated their role to involve teleworking which is familiar with knowledge worker roles and a self-interest resource that they would achieve by working in the ICT industry. This view is demonstrated by respondents indicating that “because it's IT, you can do it whenever you really want” (Guy, University) and that working in the ICT industry is:
One of the better industries to be working in just because obviously with advancements in technology you can work from home...So I think that's probably going to be a good thing. (Elisa, University)

Scholaris and Marks’ (2007) research identifies that today’s software workers are “viewed as knowledge workers and demand the associated material rewards.” The findings of this research extend this argument to include all emerging ICT workers, and not just software workers as having an expectation that they would be compensated favourably when working as a professional in the ICT industry. This expectation was an important motivating factor for the respondents’ pursuing a career in the ICT industry.

4.3.2 Opportunities and benefits

The top five places to work in the BRW’s list of 50 Best Places to Work in Australia are ICT companies and 20 organisations in the list are ICT companies (BRW, 2015). Companies indicate that because of the inability to fill positions with qualified applicants they do their best to motivate and reward employees for performing highly focused work for extremely long hours by providing “healthcare subsides, additional time for leave, games rooms, massages and free food” (Schmerhorn et al., 2014, p. 448). It was evident from the interviews that TAFE and university respondents were pursuing a career in the ICT industry because of the opportunities and benefits, self-interest resources, they perceived they would acquire through the work they would be performing and the employment conditions of the ICT industry. There were two female university respondents who had secured graduate positions with consulting firms before finishing their degrees. Typically most respondents (50) were confident, and some were “very confident” (Mitchell, University) of finding work in the ICT industry. Most TAFE respondents are completing a bridging course or will endeavour to go to university after completing their TAFE course. Most respondents
believe that they will remain in the ICT industry for their future career but will perform different roles over time. Many expressed interested in achieving management roles in the industry. The barriers and challenges that the respondents expect to face when pursuing a career and a promotion in the ICT industry were associated to restricted opportunities for employment due to work conditions, outsourcing, offshoring and continual upskilling. Overall respondents had high commitment levels to a career in ICT industry and appeared to be “not easily swayed by external influences and pressures in their chosen life directions” (Kroger & Marcia, 2011, p. 35). This suggests that the respondents had reached the identity achievement stage and had constructed their professional identity. For example, the interview with Lily, a university student, demonstrates the level of commitment these respondents had to pursuing a career in the ICT industry:

Interviewee: My eyesight. It's a double-edge sword; I love technology, I love computers but if I keep going in the IT industry there's a chance I'll lose my sight...I've had bad eyesight ever since I was a kid. The strain from computers and other devices like laptops and tablets and phones that was on my eyes, the faster it will go.

Facilitator: So is that then a concern to you because you're looking at getting into the IT industry?

Interviewee: Yeah but that's not going to stop me [laughs].

The integration of ICT into jobs outside the ICT industry requires most employees to have some level of ICT skills. Computer literacy and the preparedness to use emerging technologies to their full potential are prerequisites for entry into most workplaces with career value (Schermerhorn et al., 2014). Existing graduate employability research indicates that graduates need to have transferable skills to be immediately and sustainably employable because of the rapidly changing information and knowledge-intensive economy (Bridgstock, 2009). The respondents
reflected this understanding as they commented on the benefit of obtaining self-interest resources such as ICT knowledge and skills whilst completing their tertiary studies which would increase their employability in any industry. This understanding is illustrated in the statement that ICT is “actually underpinning everything that we do and it's only going to increase” (Chris, University). The benefit of pursuing an ICT career is that ICT skills are transferrable. Respondents believed that by obtaining ICT skills and knowledge it would provide alternative employment opportunities in other industries if they were unable to find suitable work in the ICT industry. Enrolling in double degrees that included ICT was viewed as being advantageous as industries, for example accounting, utilised “a lot of IT systems” (Kerry, University) and therefore made ICT a complimentary degree to undertake with other tertiary degrees.

Respondents believed that organisations outside of the ICT industry favoured graduates with ICT skills when filling vacancies:

That's why they liked me, because I had the background - I had the computer system knowledge that supports everything that we did. So yeah, like even if I don't necessarily go into a strictly IT path I have the benefit and obviously they're going to utilise my skills. (Kerry, University)

Studying ICT as well meant that ICT could be a future career if they had decided not to embark on a career in the industry after graduation. Two respondents (one TAFE student and one university student) felt they were “50/50 split” (Gary, TAFE) and “still tossing up” (Elsa, University) between pursuing an ICT career or teaching ICT “obviously IT was the one thing that I was always like” but “If I get to the end of my IT degree and go, I really want to do it I'll go and do a graduate diploma in education” (Elsa, University).
The ICT industry is fluid, complex and challenging to describe (Timms et al., 2008) mainly because it consists of a group of professionals who are a “much larger and more diverse group than computer scientists and engineers” (Denning, 2001, p. 15). The diverse roles that exist in the ICT industry were appealing more so to university respondents compared to the TAFE respondents. Six respondents (University students) were interested in pursuing roles outside of the standard roles such as networking, computer programming and gaming. The respondents were interested in and enticed to a career in the ICT industry because “there are so many different fields within the IT” that provided “variety” compared to other industries that enabled an individual to “change jobs without changing jobs” (Kerry, University).

As technology is ever-changing and evolving, ICT professionals must maintain their skills as well as gain various skills such as project management, communication and business related type skills to remain employable (Goles, Hawk, & Kaiser, 2008; Holtgrewe, 2014). University respondents indicated that there is a requirement of “a need to develop” and constantly upgrade their ICT “skills further after uni” (William, University) if they were interested in a career in the ICT industry. Male university respondents and female TAFE and university respondents were concerned that their ICT skills would become obsolete which would influence their career opportunities in the ICT industry if they didn’t upskill. They were concerned as to how they would manage this requirement “if I'm working full time as well, I'm not sure how I'd do that” (William, University).

Female TAFE and university respondents raised the issue of skill obsolescence when working in the ICT industry as a constraint because of their existing or future family commitments. Adam et al. (2006) argues that the ICT industry offers an
interesting and well paid career and women should be allowed the same access to these opportunities as men. Empirical research indicates that family responsibilities do not present a barrier to entry into a professional career trajectory for women in STEMM (science, technology, engineering, mathematics and medicine) professions (Kimmel, Miller, & Eccles, 2012). However, Rehman and Roomi (2012, p. 209) explicitly state that irrespective of the industry “managing family and work responsibilities is one of the most significant challenges women face.” This was a real concern for some female TAFE and university respondents who “later on when I potentially want to start a family” as they expected it not to be a “a barrier, but a challenge staying up to date with current trends and technology, especially when starting a family” (Kerry, University). The female respondents anticipated that they would be forced to choose between having a family and working in the ICT industry. Barbara, a TAFE student, recalled her experience about women who have children and currently work in the ICT industry:

It's also a case where in my experience, that you heard a lot of talk about how - it was like it was wrong for her to have a baby. There have been like oh, no, so and so is not here, we need her to do this. I was like, well she just had a baby. So I did hear things like that. I did get my little experience of that. I thought, oh that's an eye opener.

There were some (five) female respondents who did not anticipate any difficulties with deciding to have a family and working in the ICT industry. They believed that “businesses in general are getting better with supporting mothers that are coming back to work” (Beatrice, University). Female respondents who did not have children felt that they had a better opportunities with for acquiring employment in the ICT industry compared to the female ICT respondents who had children.
The employer I'm with now, first thing she asked me was oh, do you have kids? I know that's illegal and unacceptable, but in a job interview, you can't really tell them that. I had the answer she wanted anyway. (Kym, TAFE)

Despite the concern of having to balance work and family commitments female respondents remained committed to a career in the ICT industry. Similarly to existing empirical research completed by Adya (2008a) some women ICT workers although expressing strong dissatisfaction with working in the ICT industry because of the lack of a work-life balance, persevered with work because of deep career entrenchment.

Receiving a scholarship was considered a valuable incentive to female respondents which assisted their pursuit of a tertiary education to gain entry into the ICT industry. Literature identifies the importance of scholarships for the ICT industry in attracting and allowing women the opportunity to undertake quality technical training in tertiary institutions (Adya, 2008a). Scholarships are offered by many tertiary educational institutions to provide the necessary support to students who are commencing studies or continuing their studies in the ICT industry to allow them the opportunity to overcome financial or other circumstances influencing their pursuit of a career in the ICT industry (ACS Foundation, 2015). Female respondents reported that scholarships were provided by government agencies and university institutions to attract females to study ICT. Four university female respondents were successful with receiving scholarship support which “helps a lot” (Kerry, University) and “it looks good on a résumé” (Lisa, University). One female received a tertiary sporting scholarship. A female respondent mentioned that it was best for her to keep the fact that she was successful in obtaining a scholarship to herself so as not to provoke any ill feelings amongst the male ICT students. The scholarships appeared to be successful in providing incentives and financial assistance to allow the female
respondents the opportunity to pursue a career in the ICT industry. Rose, a university student indicated that “There are a lot of people that have gotten one...there's a girl in IT one... I know a few of them have gotten that one.” This illustrates that females are taking advantage of gender based scholarships to assist their career pathway into the ICT industry. The issue of the scholarships being available to a variety of females was raised, not only by those who received high grades “I got a lot of emails about them but personally I didn't feel comfortable in my skills to go after them’’ (Kerry, University) and more appropriate timing for scholarship applications to be submitted. Although most scholarships were only available for the first year of study, which made it financially challenging for them to continue with their course, they persevered and found some form of employment to financially support themselves so that they could complete their tertiary education.

Organisations are increasingly outsourcing and offshoring their ICT functions (AWPA, 2013). Hence, outsourcing and offshoring are challenges that individuals wishing to pursue a career in the ICT industry will face (Fuchs, 2014; Holtgrewe, 2014). Empirical research identifies that the outsourcing is identified as having a negative influence on ICT enrolments (Van Sickle, 2008). Six university respondents raised concerns about having to overcome outsourcing and offshoring with working in the ICT industry.

You're not just competing against someone sitting next to you, you're competing against people from all around the world. I think outsourcing is becoming the norm rather than the exception now... (Chris, University)

Existing research indicates that factors such as outsourcing, offshoring, a male dominant work culture and environment, and continual upskilling are characteristics of the ICT workforce (Holtgrewe, 2014). The respondents expected to face these challenges when working in the ICT industry and yet they were not
disincentives to their pursuit of a career in the ICT industry. The respondents remained confident that a career in the ICT would satisfy their acquisition of self-interest resources.

Certainly when one's confidence in knowing that, or believing, that opportunities will exist...as beautiful as woodworking is, it's more attractive as a career opportunity than making furniture. (Chris, University)

4.4 SUMMARY

The analysis presented in this chapter revealed that professional identity influences featured strongly in student accounts for deciding to pursue a career in the ICT industry. The perceived high status associated with being an ICT professional was a strong motivator for seeking an ICT career. The findings also revealed that self-efficacy appears to influence decisions around the type of ICT job being sought (e.g. programming versus helpdesk support) rather than the decision to enter the industry per se. Although respondents reported having little professional connections to the ICT industry they did not perceive that a lack of a sense of belonging and attachment to the ICT industry as an impediment to them pursuing a career in the industry.

The analysis also revealed that although professional identity factors featured strongly in student accounts, self-interest factors were extremely significant in influencing a respondent’s choice to pursue a career in the ICT industry. Respondents associated employment in the ICT with being well paid and that there were high levels of autonomy and opportunities for pursing a work-life balance. On the whole university respondents believed that their studies had prepared them for an ICT career. While the practical orientation of TAFE qualifications were positively valued a sub-Bachelor qualification was deemed insufficient without significant prior industry experience. As a result, many TAFE respondents indicated that they were
intending to pursue a university qualification at the completion of their vocational studies to improve their employability and the likelihood of gaining a ‘good’ ICT job that satisfied their self-interest.

Overall, the findings indicate that students perceive a career in the ICT industry to provide them with a professional status which would allow for the obtainment of a high income, increased employability and career opportunities, flexible work arrangements and undertaking challenging and intellectual autonomy work. The next chapter considers the influence of these constructs on decisions to pursue a career in the ICT industry and the extent to which these support the assumptions which underpin existing government and industry initiatives to promote ICT careers.
Chapter 5: Discussion and Conclusion

5.1 INTRODUCTION

This research has identified that professional identity influences ICT career choice in individuals only when self-interest is met. To date, government and industry efforts to improve the uptake of ICT courses and ICT careers have focused on investing resources in developing a strong professional identity in individuals. This has included promoting the status associated with being an ICT professional and attempting to create a sense of belonging and attachment to the ICT profession through networking and mentoring programs. Some attention, such as in expanded graduate programs, has also been applied to highlighting the positive aspects of ICT work including creativity, flexibility and autonomy. These programs largely attend to developing and shaping the nascent professional identity of the emerging ICT workforce (AWPA, 2013). However, this present research argues that the focus should include specific attention to self-interest such as through addressing and investing in structural opportunities which include income, job opportunities and working conditions associated with the ICT industry.

This chapter provides a critique of the mutually reinforcing relationship that exists between the structural opportunities and benefits that are aspects of self-interest, and professional identity dimensions such as status and esteem, sense of belonging and attachment, and mastery in influencing an individual’s decision to pursue an ICT career. The findings of this qualitative research show that an individual’s personal and professional biographies mediate the influence of the
professional identity and self-interest constructs when an individual decides to pursue an ICT career.

5.2 RELATIONSHIP BETWEEN PROFESSIONAL IDENTITY AND SELF-INTEREST

Importantly, this research extends the argument (Marks & Thompson, 2010) that both professional identity and self-interest should be investigated when exploring employment motivations and expectations, because individual and group behaviour is likely based on factors associated with identity and self-interest. Professionalism is an occupational strategy which enables the negotiation to obtain power and rewards associated with technical expertise (Adams, 2007; Sachs, 2001). There is an attraction to an occupation based on both professional identity resources, as well as self-interest resources of a variety of socioeconomic factors and opportunities (Cowin et al., 2013). By obtaining a professional status, the likelihood of job security, autonomy, social esteem and income will increase for individuals (Adams, 2007) and these factors influence job satisfaction and work commitment (e.g. Allgood et al., 2000; Ang, 2012; Brunges & Foley-Brinza, 2014). The research revealed that a mutually reinforcing relationship exists between professional identity and self-interest when analysing student accounts of deciding to enrol in tertiary education to pursue a career in the ICT industry.

The dimensions of professional identity were influential in driving career decisions for both TAFE and university respondents because they allowed for the acquisition of self-interest resources such as income. Respondents expected to obtain a high income working in the ICT industry. This expectation was based on their perception that because the ICT profession had a high status it would attract a high level of remuneration. Respondents believed that the heavy reliance on and
integration of ICT in all aspects of society would guarantee that they would be highly compensated for their work and their employment opportunities would be abundant. The respondents anticipated a good work/life balance because ICT professional work is autonomous in nature, therefore allowing respondents to be in control of their work hours, and to work from home. The respondents also believed that performing intellectually challenging work would allow them to obtain the ICT skills that would be transferrable and sought after by other industries.

Although overall the relationship between professional identity and self-interest proved to be influential in driving student career decisions, not all professional identity and self-interest factors had the same level of influence. A lack of a sense of belonging or attachment to the ICT industry did not appear to influence respondents’ decisions to pursue a career in the industry. Similarly, comparatively lower levels of self-efficacy were not a significant influencer for female respondents regardless of their level of study. Furthermore, potential challenges to job security and employment opportunities as a result of workplace practices such as outsourcing and offshoring, were not considered by respondents as disincentives. The need for upskilling was seen as a problem although it could be argued that TAFE respondents already identified the need to upskill to enter the ICT industry. Long work hours are the reality (e.g. Fuchs, 2014). However, the respondents still have notions of flexible work practices.

Decisions to pursue an ICT career are complex and at times they can be contradictory. They can be conceptualised as push and pull factors towards pursuing an ICT career. Push factors are the challenges or obstacles that the respondents identified as having to overcome during their career in the ICT industry, whereas pull
factors are those raised by the respondents as important drivers for their deciding to work in the ICT industry.

Students have their own personalities, culture and values, and past experiences, which influence the formation of a professional identity and are not blank pages waiting to be imprinted with professional persona (White & Ewan, 1997). Examples of personal and cultural values, family background, relationships with family and peers and professional experience in the ICT industry had a noticeable effect on the significant level of influence of professional identity and self-interest on the student’s decision to commence a career in the ICT industry. In this research, professional experience sharpened the pull factors as respondents who had already experienced working in the ICT industry expected to work long hours. However, respondents who had not completed any form of work experience were not aware of such demands. Professional experience also improved the influence of push factors as the respondents who had worked in the industry were accustomed to benefits such as a high income.

Both TAFE and university respondents displayed a strong commitment to pursuing a career in the ICT industry. However, it was clear from the data that despite respondents’ loving all things ICT and investing time and money in enrolling in tertiary education to gain employment in the industry, respondents had created contingencies which they would implement and execute, if after completing their ICT tertiary education they were unable to find suitable work, or if they decided not to pursue an ICT career. That is, despite respondents expressing high confidence that they would gain a good ICT job, TAFE respondents were continuing their ICT tertiary education at a university institution before seeking entry to the ICT workforce. Some university respondents were completing postgraduate courses or
double degrees such as, an ICT and education or ICT and accounting to enhance their employability. To capture whether respondents made the decision to not pursue a career in the ICT industry and execute their contingency strategies, it is proposed that conducting a longitudinal study with the respondents when they have completed their tertiary education should be considered for future research. This would confirm if the expectations and perceptions that the students had of the ICT industry had matched their experiences. A longitudinal study would allow for a more in-depth understanding of the patterns of change which are beneficial when exploring career behaviour (Menard, 2002).

5.3 PUSH FACTORS: ATTRACTION TOWARDS A PROFESSIONAL CAREER IN THE ICT INDUSTRY

This study showed that some TAFE and university respondents clearly viewed working as an ICT professional as a way in which they could increase their socioeconomic status. Baldry and Marks (2009) noted that individuals are attracted to software work because the work is positioned as middle class or professional to upper middle class and offers socioeconomic mobility. This research extends this notion further, showing that other roles within the ICT industry are also perceived as high status roles. For example, respondents from low-income households were pursuing an ICT career because it was a professional role with a high income that would allow experience of a better lifestyle and the provision of financial support to their parents and family. Similarly respondents who had grown up in high income households perceived that an ICT career would allow them to continue to experience a good lifestyle and would satisfy the expectations of their parents by pursuing a professional career.
Extant literature identifies that an individual’s motivation to pursue a profession is influenced by the perceived family expectations of the profession (e.g. Adya & Kaiser, 2005; Khapova et al., 2007; McLachlan et al., 2010; Skorikov & Vondracek, 2011). However, Pollacia and Lomerson (2006) found that family or peers had no influence on an individual’s decision to enter or avoid Computer Science/ICT. This research found that most TAFE and university respondents believed that ICT work is considered by their family and peers to be a good and valued occupation because it provides a significant contribution to the community, and this influenced their decision to pursue an ICT career.

Most importantly, this research revealed that the negative stereotypes associated with the ICT industry have a positive influence on an individual’s career decisions. Despite ICT work being associated with negative stereotypes (Clayton et al., 2009; Von Hellens et al., 2009) and portrayed as dull and associated with work that many individuals would not want to undertake (Van Sickle, 2008), the respondents highlighted that for them an ICT professional is someone that has a high level of intelligence because of the ‘geek’ and ‘nerd’ stereotypes used to described ICT professionals. The data highlights that the majority of the respondents believed that the ‘nerd’ and ‘geek’ stereotypes are positive as they believe to be labelled a ‘nerd’ or ‘geek’ means that they are viewed by society as being extremely intelligent. Von Hellens et al. (2009) research that includes secondary school students as participants identified an ICT professional as an individual who is ‘smart, a problem solver, and creative’ and were less likely to associate ICT work to the stereotypical terms ‘nerd’ or ‘geek’. The students in this research associated a high level of technical proficiency and intelligence with the ICT profession and expect ICT work to be interesting, challenging and autonomous in nature.
A positive relationship exists between job satisfaction and performing roles that are challenging and autonomous in relation to ICT professionals (Buche, 2008; Jemielniak, 2012). The ICT profession is commonly referred to and considered as knowledge work and respondents were attracted to an ICT professional career because they were seeking intellectually autonomous, interesting and challenging employment.

Career choice literature identifies educational and career choices as being strongly influenced by an individual’s “skills, competencies and abilities” (Agarwala, 2008, p. 370) to perform in a given profession. In this research, male respondents displayed high levels of self-reported technical proficiency which they believed would lead to increased employment opportunities within the ICT industry. In comparison, most female respondents believed they had lower levels of technical confidence despite having proven their proficiency by achievements such as the award of scholarships and high grades. This finding may relate to literature which suggests that a lack of confidence and competence is likely to result from feeling inferior or intimidated by a male dominated field (Anderson, Lankshear, Timms, & Courtney, 2008). Contrary to research undertaken by Dunlap (2005) which found a lack of confidence in students’ ability to excel in the software engineering industry, led them to switching their major. This research identified that respondents who had low self-efficacy considered applying for a lower level ICT job to gain entry into the ICT industry (e.g. programming versus help desk support) rather than the deciding not to enter the industry at all.

The declining of numbers of student enrolments in ICT programs has been linked with the “perception of a weak job market” (Pollacia & Lomerson, 2006, p. 224). This research found that respondents anticipated finding a suitable job in the
ICT industry once they completed their tertiary education. As well as greater employment opportunities, respondents expected to experience a wide range of career opportunities because ICT skills are highly desirable and transferable to affiliated professions such as education, accounting and business. Acquiring ICT skills and experience is an attractive factor for respondents because of the emergence of ICT in most workplaces. Successfully completing an ICT qualification provides additional employment opportunities to work in various industries. For example, the introduction of 3D printing will see software development and design skills become an integral part of manufacturing in the future (Committee of Economic Development Australia (CEDA), 2015). Obtaining ICT skills and experience is an investment in human capital for students to increase their prospects of obtaining greater professional rewards (Zhang & Jones, 2009).

Overall, university respondents expect that their tertiary studies will prepare them for an ICT career despite recommendations from government agencies to update the tertiary curriculum (AWPA, 2013) and businesses highlighting the difficulty in locating an ideal candidate (Department of Employment, 2014). TAFE respondents value the practical orientation of related to their qualification. However, the majority of TAFE respondents expect that a sub-Bachelor qualification, without significant prior industry experience, is likely to be insufficient to acquire suitable employment in the ICT industry. To improve their employability and the likelihood of gaining a ‘good’ ICT job that satisfied self-interest many TAFE respondents intended to pursue a university qualification at the completion of their studies. Despite respondents expecting to gain various benefits and have increased opportunities as a result of being an ICT professional they expect to face work and gender related challenges during their career trajectory in the ICT industry.
5.4 PULL FACTORS: PERCEIVED CHALLENGES WITH PURSUING A CAREER IN THE ICT INDUSTRY

Respondents indicated that they expected to face various employment and workplace related challenges during their career in the ICT industry. Existing literature argues that because the ICT industry is characterised by high job insecurity, and working conditions that include excessive work hours and negative work–life balance, these factors are considered disincentives to individuals wishing to pursue a career in the ICT industry (Holtgrewe, 2014). Respondents in this research also indicated an awareness of such challenges such as outsourcing, off shoring, long work hours, limited professional opportunities for women and the need for frequent upskilling that they may need to overcome in their future career trajectory. Respondents believed that these factors would not prevent their pursuit of a career in the ICT industry. The respondents’ perceptions of these challenges appeared to be based on a preliminary understanding of how these factors might limit their future employment opportunities.

Existing literature identifies a sense of belonging and attachment is contributory to developing a strong professional identity (Ashforth & Mael, 1989; Brooks et al., 2011) which is influential for pursuing a specific career. Contrary to this, the present research identified that most respondents report a low sense of belonging and attachment to the ICT industry despite believing that they have similar characteristics associated with their image of being an ICT professional. Most respondents do not perceive a lack of sense of belonging and attachment as an obstruction to their pursuit of a career in the ICT industry.

ICT work is commonly known as knowledge work and as technology is continuously evolving, it is expected that ICT professionals embrace their career as life-long learners. New roles continually emerge in this industry and for employees
to remain valued they need to have the necessary ICT skills and competencies and if they do not then this is proven to influence their career opportunities (Zhang & Jones, 2009). Such rapid technological changes have shaped the nature of labour in the ICT profession to that of a highly trained workforce (Gijbels, Raemdonck, Vervecken, & Jonas Van, 2012). As research that investigated workers in the ICT industry (e.g. Gijbels et al., 2012; Jemielniak, 2012; Marks & Huzzard, 2010) has proposed the issue of ICT professionals’ having to upskill constantly and also the concern of having adequate time to develop skills and knowledge necessary to continue a career in the ICT industry, was raised by respondents in the present research. However, the notion of having to be a lifelong learner is not considered a disincentive by respondents.

Concern about the underrepresentation of women in professional roles in the ICT industry, not only in Australia but also other industrialised countries has been raised by a number of researchers (Vitorez & Gil-Juárez, 2015). Female and male respondents interviewed in this study were aware that female respondents will face challenges in the ICT industry as a result of their gender. However, the female respondents believe that these challenges can be overcome. A significant finding in this research was that four university female respondents were attracted to a career in the ICT industry because they perceived their gender would increase their employability because of the low representation of females in the industry.

The stereotypical perceptions that female ICT professionals were more suited to perform less technical roles still exists. This preconceived notion may stem from the ICT industry’s being traditionally represented as a white male dominated industry (Worthington et al., 2013). Gender related stereotypical views that categorise work depending on gender are influenced by social and cultural environments (Tabuwe et
al., 2013). Crawford (2013) identifies such stereotypical gender related views and expectations that males pursue ICT because of their interest in programming and games, whereas females pursue ICT to further their learning and because they excel with social media. This has a direct influence on a student’s attraction to ICT. This research identified that female respondents expected to continue to face such gender related stereotypical views. However, they felt these could be overcome and did not have an influence on their decision to work in the ICT industry.

Extant literature has identified the importance for organisations and industry bodies to focus on improving working conditions in the ICT sector such as increasing job security, eliminating excessive work hours and negative work life balance. These career-related factors negatively influence the attraction and retention of individuals to the ICT industry (Holtgrewe, 2014). Both female and male respondents raised concerns about balancing family and work commitments, characterising them as challenges they were likely to face when working in the ICT industry. Most respondents who had prior experience working in the ICT industry raised long work hours as a negative factor. Only the university respondents perceived outsourcing and offshoring as challenges to their career in the ICT industry. Outsourcing of ICT work has significantly increased and researchers suggest that individuals are pursuing other careers because of the lack of job security in the industry and the unavailability of ICT roles (Adya & Kaiser, 2005). Despite these factors’ being raised as challenges by respondents they were not considered to be disincentives to entering the ICT industry.

Current research has identified work life balance to be an important employment feature for software workers (Fuchs, 2014; Jemielniak, 2008; Marks & Huzzard, 2010) despite the reputation of the ICT industry for requiring their workers
to work long hours (Jemielniak, 2012). An awareness of having to work long hours, this was not seen as a barrier by respondents who wanted to pursue a career in the ICT industry which may result in a failure to fully appreciating the demands of balancing a career and care.

5.5 IMPLICATIONS FOR THE ICT INDUSTRY

The participants in this research are respondents who have already commenced their journey to an ICT career and have made substantial financial and time commitments by undertaking tertiary education. It is proposed that further research involving respondents who have decided against a career in the ICT industry after their secondary schooling is complete would further validate the push and pull factors identified in Figure 5.1.

![Figure 5.1 Factors Influencing Career Choice](image)

*Figure 5.1 Factors Influencing Career Choice*
5.6 RESEARCH CONTRIBUTION

This research contributes to the career development literature by extending and providing evidence of the ways in which both professional identity and self-interest work together to inform career selection. Extant literature has tended towards exploring these constructs separately despite the relationship between professional and structural dimensions which influence decisions. The present findings strengthen and add to social identity theory by specifically including the concept self-interest, which was found to be more influential in career decision making. It is difficult to isolate the effect that professional identity and self-interest have on an individual’s career decisions in any individual case, because of personal circumstances which are in turn dependent upon temporal and contextual factors. These play a significant role in directing an individual towards the achieving different goals throughout their life. Value is also added by this research as the coding structure has clarified themes in the emerging ICT workforce that shaped their career decisions. The findings of this research contribute to the understanding of how ICT students conceptualise a professional career in the ICT industry and provides the ICT industry with conceptual and pragmatic information to better understand their workforce.

Eatough and Tomkins (2014) suggest that future identity research needs to investigate discourse, agency, subjectivity and experience from an individual’s perspective. This research addresses this request in that the focal point is to understand, from an individual’s viewpoint, ICT students’ expectations and perceptions of a career in the industry based on their personal and professional biography. The responses from 52 tertiary students usefully allows for reflecting on how individuals make conscious decisions to embark on a career in the ICT industry. This study provides a unique exploration utilising professional identity and self-
interest to understand the motivating factors and expectations of individuals towards a career in the ICT industry.

Marks and Thompson (2010) identify the broader benefits of utilising the two interrelated phenomena of professional identity and self-interest when investigating the behaviour of an individual and a group. There is limited empirical research that has explicitly investigated the relationship between professional identity and self-interest (Jenkins & Delbridge, 2010). These facts together confirm the recommendation for further research to continue to explore the relationship between these two complex constructs.

**5.7 CONCLUSION AND IMPLICATIONS**

The importance of attracting diverse, qualified and experienced individuals to an industry upon which all aspects of society rely, is indisputable. However, because of the growth of public scepticism and the lack of trust of claims made by professionals (Rowland, 2006; Adams, 2014), government agencies and ICT industry groups, a significant benefit results from the consideration of both self-interest and professional identity factors in parallel. This is especially so when seeking to attract and retain appropriately qualified individuals to the ICT industry. The perceptions and expectations of individuals who have commenced some type of formal education towards a career in the ICT industry provide an understanding of those internal ideologies in addition to their expectations about working in the ICT industry. The attachments that individuals associate with their entry into a profession and how those attachments to the industry are challenged and changed by their experiences and the conditions of work, allow for an understanding about the broader problems faced by the ICT industry. To perceive that individuals are merely identity-seeking is problematic, when attempting to attract suitably qualified applicants to a profession.
as there are competing identities (gender and ethnicity) and interests within professions (Marks & Thompson, 2010).

This study commenced with the broad research question of *How do professional identity and self-interest influence the intention to pursue a professional career in the ICT industry?* The aim has been to understand how professional identity (expectations of symbolic resources) and self-interest (in relation to structural opportunities and constraints) together influence decisions to pursue study which is expected to lead to professional employment in the ICT industry. This research adopted a critical realist paradigm and qualitative research methodology that involved students studying ICT at a South East Queensland TAFE or university. The influence of family and peers relationships and education and work experiences that contributed to the decision to work in the ICT industry, were also considered.

The findings were that status appears to be the most significant professional identity resource available to professions. All aspirant occupational groups seek professional status and aim to achieve professional autonomy to achieve power and prestige (Adams, 2015). The ICT profession is a heterogeneous and complex group and it is more differentiated than any other profession. ICT functions continue to be outsourced and offshored and the ICT industry does not have the traditional tools of self-regulation such as indoctrinated accreditation when becoming an ICT professional. Such factors make it challenging for the ICT industry to frame their identity seeking strategies or behaviour in order to achieve professional status to attract individuals aspiring to a career in the ICT industry.

The ICT industry had the lowest level of ICT graduate hiring in 5 years in 2014 (Department of Employment, 2014; Clicks IT Recruitment, 2015). ICT industry groups and tertiary education continue to work together to focus on developing
initiatives that increase the attachment and understanding that students have of the ICT industry. Examples of the initiatives include the use of internships/practicums, networking events and mentoring programs. Rather than specifically focusing on such initiatives that create a sense of belonging and attachment to the ICT industry approaches must also recognise and take into consideration the insufficient graduate employment opportunities and the increased trend in outsourcing and offshoring ICT functions. The influence of the limited graduate employment opportunities and low employment security on the attraction of individuals considering an ICT professional career must be acknowledged.

Calls for further investigation of disincentives related to a career in the ICT industry such as outsourcing, offshoring, increased professional employment opportunities for women and negative work-life balance to be investigated and resolved must be considered further. Despite individuals viewing these career-related factors as challenges which can be overcome, these factors have a noticeable influence on the forms of attachment an individual has with the ICT industry. Recognising that individuals decide to pursue an ICT career to obtain self-interest resources through the use of professional identity which is dependent upon their sociocultural and individual characteristics as well as their early work experience and post-secondary education, can assist the development and implementation of a more appropriate and efficacious initiatives.
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