The undoing of gender by senior female leaders within New Zealand's ICT industry

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A thesis submitted to Auckland University of Technology in partial fulfilment of the requirements for the degree of Master of Business

2020

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Abstract

The Information and Communications Technology (ICT) industry is one of New Zealand's fastest-growing and well-remunerated industries. Within New Zealand's ICT industry, the average salary is $82,000, compared to the country's average salary of $47,868 (AbsoluteIT, 2016a). Despite the Government's initiatives to encourage young women into this industry, women are still vastly under-represented, comprising only 20% of the industry (Statistics New Zealand, 2018). The barriers for women working in male-dominated industries such as the ICT industry are well documented in the 'women in ICT' literature (Cater-Steel & Cater, 2010; Griffiths & Moore, 2010; Kirton & Robertson, 2018). However, how gender constructs and social interactions can be undone within the ICT industry, and women's agency in this remains under researched.

This study investigates how senior women in ICT have challenged and changed these barriers, and why they chose to. This qualitative study used semi-structured interviews to investigate the experiences of 12 senior female leaders in New Zealand's ICT industry. An interpretive descriptive methodology was employed to guide this study (Smythe, 2012). The findings identified that social interactions, negative behaviours from female colleagues and the under representation of females in technical roles continued to maintain and construct gender within the ICT industry. However, this study found that senior female leaders in ICT are actively challenging gendered barriers, stereotypes and interactions through their actions. Additionally, participants are creating positive change by calling out negative social interactions and by supporting other women through their representation and visibility as female leaders in the ICT industry. Furthermore, this thesis identified what factors supported and influenced participants into undoing gender.

Thus, this study not only focused on the barriers for women within the ICT industry but also identified how senior female leaders are making change within the ICT industry. This study practically provided insights into male-dominated organisations and the ICT industry by identifying what is needed to dismantle gendered constructs.

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Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

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September 2020

Acknowledgements

Chapter One: Introduction

1.1 Introduction

This chapter sets the context of this research by providing background and insights into New Zealand's ICT industry. This background identifies the current status of the ICT industry and the equity and pragmatic issues for women due to their under representation within the industry. Next this chapter highlights the current debates within doing and undoing gender literature, identify the gaps within literature and how this prompted the choice of this research question: *'how have female leaders shaped New Zealand's ICT through undoing gender?'* Next, the significance of this research for present and future women working in the ICT industry and their employers will be discussed. This chapter will conclude by explaining the structure of this thesis.

1.2 New Zealand's ICT industry

As this research focuses on the doing and undoing of gender within the ICT industry, it is essential to understand the current status of women within the industry. According to Statistics New Zealand (2018) there are currently 100,000 people employed in ICT related roles and only 20,000 of these employees are women. This results in women only comprising 20% of New Zealand's ICT industry in roles such as business analysts and project managers. They are also highly underrepresented in roles such as computer applications engineers, computer programmers and system analysts (Hunter, 2012). Therefore, this under representation of women within the industry and in technical roles leads to 'equity' and 'pragmatic' issues for women, ICT organisations and New Zealand (Courtney, Lankshear, Anderson, & Timms, 2009).

Through an equity lens, the under representation of women within the ICT industry results in issues concerning participation, pay and development (Courtney et al., 2009; Kirton & Robertson, 2018). Roles in this industry are considered to be highly skilled, rewarding and well remunerated (Courtney et al., 2009; Crump, Logan, & McIlroy, 2007). The average salary within New Zealand's ICT industry is $82,000 (NZTech, 2018a) compared to the average New Zealand salary of $49,868 as of 2017 (Statistics New Zealand, 2017). Although the average salary within the ICT industry is high it is essential to consider the remuneration of women within the ICT industry.

AbsoluteIT (2016a) found that there is a gender pay gap of 7.2% nationally within the ICT industry. This gender pay gap is linked to the length of experience and working within different sectors within the industry. The gender pay gap is most conspicuous for women at the beginning of their careers however when women reach ten years of experience within the ICT industry there is little or no gender pay gap. It is not until their experience increases to 11-15 years the gender pay gap increases to 9%, this is followed by a 3.5% gender pay gap when the years of experience increase to 16-20 years (AbsoluteIT, 2016a).

In terms of different sectors within the ICT industry, women who work in information, media and telecommunications earn on average $7.88 less than their male employees per hour. Women who are in technical fields earn $6.82 less on average than their male colleagues (MYOB, 2019). Taking into account the 7.2% national gender pay gap within the ICT industry, the average salary for women within the ICT industry is $59,400 which is higher than the average salary for women in New Zealand of $37,958. However, there are regional differences in ICT wages and salaries: women in Auckland and Wellington are paid a median salary of $80,000, the median salary for women in Hamilton is $73,000 and in Christchurch is $70,000 (AbsoluteIT, 2016b). Thus, if women are not participating within this industry they are losing opportunities for challenging work, competitive salaries and development in an internationally growing digital market (Courtney et al., 2009).

The under representation of women also leads to pragmatic issues for New Zealand and organisations operating within the ICT industry. Due to the rapid development of the digital economy, several OCED countries including New Zealand are facing skill shortages within the ICT industry (OECD, 2017). As highlighted in the 2013 New Zealand Census there has been a long term skill shortage, 28% of New Zealand employers within the ICT industry have made it evident that they are struggling to find skilled workers in New Zealand and the under representation of women within the ICT industry is contributing to this (MYOB, 2018). This has resulted in government and industry initiatives such as, 'the STEM dictionary', 'a nation of curious minds', 'showtech day' and 'shadow IT' to motivate and influence young women into STEM education and careers (Appendix 1: Government Tech initiatives) (Ministry for Women, 2018; Ministry of Business Innovation and Employment,

2014; New Zealand Technology Industry Association, 2015; NZTech, 2018b; ShadowTech, 2018).

Despite various government and industry initiatives to attract young women into ICT, (Annabi & Lebovitz, 2017) found that 56% of women employed in the ICT industry internationally leave the industry within the first five years of their employment. This is double the turnover rate for men. Thus, these diversity initiatives used to encourage young women into the ICT industry are failing to consider that women entering the industry are not supported, for reasons such as lack of mentorship, masculine cultures and lack of work life balance which leads to the leaky pipeline in which women end up leaving the industry (Annabi & Lebovitz, 2017; Murrell & James, 2001; Zimmer, 1988). This is supported by (Deloitte's, 2018, p.3) research, which asked organisations if they had "initiatives in place specifically to recruit, develop, or retain a diverse IT workforce?" results showed that the majority of organisations only have general initiatives that focus on talent. Thus, organisations are lacking key infrastructures which are needed to attract, train, develop and retain a diverse ICT workforce.

Therefore, if women are encouraged into a male-dominated industry where they are not supported this leads to tokenism and alienation which in return leads to women leaving the industry (Griffiths & Moore, 2010; Seron, Silbey, Cech, & Rubineau, 2018). The lack of key infrastructures and representation of other women in the industry leads to women having to battle perceptions from others in the industry (Cater-Steel & Cater, 2010; Smith, 2013). For example, proving that they are worthy of their roles due to merit rather than from diversity initiatives (Cater-Steel & Cater, 2010; Smith, 2013). These experiences of women within the ICT industry will be further discussed in section 2.3

1.3 Current debates, research rationale and significance

Through the years, the doing of gender has been widely researched. Doing gender is when one enacts within the societal norms based on their gender. The undoing of gender is dismantling this (Butler, 2004; Deutsch, 2007; West & Zimmerman, 1987). Doing and undoing gender will be further discussed in section 2.3.

Within an organisational context, doing gender research has focused on the prejudice, gendered barriers and negative stereotypes that hinder the career

development for women. In particular, male-dominated industries such as law, engineering and academia have explored what organisational structures constructed and maintain gendered barriers (Howe-Walsh & Turnbull, 2016; Pringle et al., 2017; Worrall, Harris, Stewart, Thomas, & McDermott, 2010). The doing gender research has identified that gendered barriers are still present within male-dominated industries including New Zealand's ICT industry. This includes the under representation of women and doing gender issues and barriers such as the ideal male worker norms, organisational cultures, social interactions, old boys networks and career development barriers (Cater-Steel & Cater, 2010; Griffiths & Moore, 2010; Kirton & Robertson, 2018).

Despite the barriers, New Zealand's government has introduced several initiatives to motivate young women into Science, Technology, Engineering and Mathematics (STEM) (Ministry for Women, 2018; Ministry of Business Innovation and Employment, 2014; NZTech, 2018b; ShadowTech, 2018). These initiatives are focused on increasing the participation and representation of young women in STEM tertiary education and careers. The barriers for women working within male-dominated industries including the ICT industry has been well explored (Cater-Steel & Cater, 2010; Griffiths & Moore, 2010; Kirton & Robertson, 2018). However, how gender can be undone in practice within the ICT industry remains under researched. With these key arguments, this study will explore how New Zealand's ICT industry has been shaped by senior female leaders undoing gender. This study aims to explore their experiences of working in a male-dominated industry and understand the changes they have implemented in their organisations. Additionally, senior female leaders were chosen due to their access to resource and power which can influence change (Hovden, 2013; Stainback & Kwon, 2012).

This research will further examine senior female leaders efforts of influencing practice and the strategies they used to do so. This research poses three sub-questions:

1. What "doing gender" organisational and social structures have senior female leaders experienced within New Zealand's current ICT industry?
2. How have senior female leaders undone gender within New Zealand's ICT industry?

3. What practices, process, experiences and influences did senior female leaders draw, to undo gendered stereotypes?

Thus, this study contributes to the understanding of doing and undoing gender. It identifies the doing gender experiences of senior female leaders while working in a male-dominated industry. It also introduces practical strategies of how participants undid gender and contributed to change. Hence, this study explains how gender is constructed and maintained within the ICT industry and what strategies participants have used to undo this. It reinforces to the ICT industry what gendered barriers are still present and what support is needed to undo this.

1.4 Structure of the thesis

This thesis consists of six chapters. The first chapter, the introduction outlines the context of New Zealand's ICT industry. This provides a snapshot of the current status of the industry including statistics of female employment, average salaries, the gender pay gap and the skill shortage within New Zealand's ICT industry. Additionally, the chapter identifies the current debates within doing and undoing gender literature which is then analysed further in Chapter Two. These debates highlight the gap within existing doing and undoing gender research which prompted this study. Chapter One also identifies the significance this research has for current and future women working within the ICT industry and their employers. The second chapter, the literature review critically evaluates women in ICT, doing and undoing gender literature. It begins by identifying why there is a lack of representation of females within the ICT industry. Next, the literature review highlights the positive and negative experiences of women working within the ICT industry. It will identify how concepts linked to social interactions and organisational practices construct and maintain gender within the ICT industry. Lastly, the literature review explores the post-structural and ethnomethodological approaches for undoing gender.

Chapter Three, the methodology, identifies the philosophical background and methodology which guided and shaped this research. This includes a relativist ontology, constructivist epistemology and interpretive paradigm. Chapter three will reinforce why this philosophical background and an interpretive descriptive methodology was best suited to the research aims and questions of this study. It

identifies the positionality of the researcher, ethical considerations, data collection methods and the data analysis process. The next chapter, the findings, presents four main themes and nine subthemes that have emerged through semi-structured interviews and thematic analysis. Chapter five, the discussion, analyses these themes and identifies how these themes reaffirm or create new understandings around women in ICT, doing and undoing gender theoretical literature. The themes are interpreted to provide further insights into the participant's experiences. Lastly, chapter six the conclusion explains how this study answered the proposed research questions along with making theoretical, practical and empirical contributions. It will identify the limitations of the research and propose what future research is needed.

1.5 Chapter summary

This chapter firstly identified what the purpose and aims are of this study. It set the context of the research by identifying the background and status of New Zealand's ICT industry. This included the under representation of women within the industry, average salaries and pay disparities. The context overview highlighted that women made up only 20 percent of New Zealand's ICT industry (Statistics New Zealand, 2018), which has led to equity and pragmatic issues for women and the industry (Courtney et al., 2009). Additionally, this chapter highlighted that New Zealand's government has instigated initiatives to promote women into the ICT industry but the leaky pipeline is still present. Next, this chapter established that doing gender barriers are commonly discussed within male-dominated industries however there is a research gap regarding the practice of undoing gender which shaped this study. The next chapter, the literature review examines the concepts of doing and undoing gender. It will identify what barriers are still present within the ICT industry and Deutsch (2007); West & Zimmerman (1987) theories of undoing gender.

Chapter Two: Literature Review

2.1 Introduction

This chapter presents a review of literature identifying the concepts, theories and frameworks which will guide and support this study, exploring how female leaders within New Zealand's ICT industry undo gender. Firstly, the chapter provides an overview of the historical under-representation of young women in ICT education due to the stereotypes and perceptions of the ICT industry. Secondly, the experiences of professional females employed in the industry will be discussed. Thirdly, three key themes within the 'doing gender' literature are identified and discussed. These key themes will be used to analyse organisational practices and social interactions within the ICT industry that reproduce gender inequalities. Lastly, two approaches to how gender can be undone within male-dominated industries are explored. This literature review argues that the literature on women in ICT ignores women's agency and contribution to change. This chapter identifies the gap within the undoing gender literature, in particular the lack of research on how senior female leaders can undo gender in the ICT industry.

2.2 Women in ICT

Young women in New Zealand use computers and technology as frequently as their male counterparts (Barker, Snow, Garvin-Doxas, & Weston, 2006). However, the under representation of women in New Zealand's ICT industry remains a persistent problem (Barker et al., 2006; Hunter, 2012). Part of this problem is linked to the lack of representation of young women in ICT education, for example, statistics indicate that considerably more men than women study ICT. In 2015 69% of the students who were studying ICT in New Zealand were male (MYOB, 2018). However, women dominated in studies such as commerce, health and education (Statistics New Zealand, 2018). NZTech (2018a) also highlighted that only three percent of 15-year-old girls in New Zealand are interested in a career in ICT. This makes us consider what factors influence the decision making of young women to join the ICT industry. Internationally, research indicates that there are several factors which can influence the decision of young women to choose a career in the ICT industry including, social factors, structural factors and individual attributes (Clayton, Beekhuyzen, & Nielsen, 2012). However, for the purpose of this research, which focuses on the gendered

barriers, stereotypes and assumptions of the ICT industry, the social and structural factors such as the perceptions young women hold towards the ICT industry and the lack of role models will be discussed, rather than individual attributes (Clayton et al., 2012; Miliszewska & Moore, 2010).

Courtney et al. (2009) found that young women were not interested in joining the ICT industry due to their perceptions of the industry and the nature of the work. These perceptions young women have towards the ICT industry are based on historical stereotypes that the ICT industry holds (Clayton et al., 2012; Miliszewska & Moore, 2010). Young women perceived the culture of the ICT industry to be boring, technical and a boys' network (Anderson, Lankshear, Timms, & Courtner, 2006; Courtney et al., 2009). This is supported by Courtney et al. (2009) who found that young women in Australia believed the majority of the roles within the ICT industry lacked interpersonal skills and human interaction and therefore were not so interesting. Bartol and Aspray (2006) argued that young women do not see the social relevance of the ICT industry and instead wanted to be part of an industry which allowed them to make a difference. Barker et al. (2006) research also found that young women will participate in social contexts, including employment, which they believe are linked directly to their gender and communication style. This leads to young women falling into categories which are socially considered to be fit for their gender. However, this is conflicting for young women who are interested in the ICT industry as computing and ICT is seen as male dominated.

A second perception young women hold towards the ICT industry is the need to have strong computer and math ability (Barker et al., 2006; Bartol & Aspray, 2006; Sáinz & Eccles, 2012). Sáinz and Eccles (2012) found that students who believed that they had strong computer and math ability chose careers in ICT. This is supported by (Bartol & Aspray, 2006) who highlighted that the students who score highly in maths and science are approached to consider a career in ICT. Although maths is an important element within the ICT industry, not all roles require it, such as Business Analyst, Project Managers and Web Design. It is important to note that technical roles such as Software Developer, Network Systems Engineer and Network Analyst which are highly regarded in the industry do require strong math skills (Careers New Zealand, 2018). This challenges the recruitment strategies of young women into the ICT industry that disregard maths ability. As this leads to task gender

segregation in which men hold the technical and well remunerated roles and women are over represented in softer roles (Bartol & Aspray, 2006; Crump et al., 2007).

Clayton et al. (2012) additionally argued that the lack of role models within this industry maintains these stereotypes and leads to young women not being able to identify themselves within the industry. This lack of self-identification leads to young women self-selecting into fields which have a high representation of women such as commerce, health and education in New Zealand (Ahuja, 2002; Clayton et al., 2012; Statistics New Zealand, 2018). Bartol and Aspray (2006) argued that role models for young women should not be limited to women in the industry but role models should also be teachers, counsellors and parents. These role models can guide and support young women who are interested in the ICT industry along with correcting stereotypical perceptions of the industry (Bartol & Aspray, 2006; Jones, 2017). An example of this is within Clayton et al.'s (2012) research, they found that 85% of participants who attended an ICT information event found role models useful because they perceived those female role models could introduce new concepts within the ICT industry and change perceptions of the roles and jobs within the industry.

As stated in section 1.2 this under representation leads to equity issues for women, such as missing out on challenging work and well remunerated roles, and pragmatic issues for the industry such as trying to fill the skill shortage (Courtney et al., 2009). Therefore, before exploring the concepts of doing and undoing gender it was essential to identify why women remain under-represented within the ICT industry. In line with what women are missing out on there are numerous benefits of working within the ICT industry which contributes to job and career satisfaction and drives women to remain in the ICT industry (Sumner & Niederman, 2004). Teague's (2002) research with fifteen American female IT professionals found that women enjoyed their work due to the nature of their tasks. While they found their roles to be challenging, they could solve problems, travel and be remunerated well. This is supported by (Crump et al., 2007) who identified that the top three drivers for women within the ICT industry were the responsibility they held, job interests and challenges within their roles. Working within the ICT industry allowed women to have broad portfolios. Despite this enjoyment within their roles, women in all studies (Crump et al., 2007; Sumner & Niederman, 2004; Teague, 2002) highlighted

that the male-dominated environment, lack of other female colleagues and organisational practices caused barriers to their development and salaries which resulted in the ICT industry being difficult to work in.

2.3 Doing gender

As highlighted above the positive experiences such as the challenging level of work, broadening their skill portfolios and changing nature of the ICT industry identified why female ICT professionals stay in the industry. However, despite this, the negative experiences of women within the ICT industry identify issues which hinder their everyday working interactions, career development and lead female professionals to exit the industry. These experiences are a result of the construction and maintenance of gender within ICT organisations and the industry. This section will explain how gender is constructed through Nentwich and Kelan's (2014) framework of gendered structures, hierarchies, cultures, interactions and identities. It will then identify how these doing gender constructs are maintained through (P. Y. Martin, 2003) concepts of organisational culture, organising processes and interactions.

Lorber (2018) defines 'sex' as an individual's assignment into a sexual categorisation due to their birth. However, 'doing gender' can be defined as the socially constructed gender norms within these sex categories. These gender norms have been embedded and created through social interactions such as socialisation, gendered stereotypes and traits of masculinity and femininity. This in return, determines what roles, behaviours and actions are suitable for each sex category (Ravenswood & Harris, 2016; West & Zimmerman, 1987).

Although the definitions of 'sex' and 'doing gender' are different, their intersection creates disempowerment for certain groups such as women (Ravenswood & Harris, 2016). This disempowerment has developed through a history of patriarchy where males' societal positions were determined from the positions they held at home, for example being the head of their household (Weber, 1947). This led to men having to prove their dominance amongst one another, which lead to dominance over women. The concept of patriarchy has changed in recent years and can be defined as the "system of social structures and practices in which men dominate, oppress and exploit women" (Walby, 1990, p. 20). Thus, patriarchy has led to the development

of the natural social order in which males hold dominance (Ravenswood & Harris, 2016; West & Zimmerman, 1987).

The doing of gender is embedded in societal norms through patriarchy and the natural social order, however, these norms and inequalities are maintained and reinforced within organisations and structural frameworks (Acker, 1990; Bierema, 2016; Billing, 2011). P. Y. Martin (2003), highlighted that doing gender is a dual process in which both organisational practices and the social practices of gender in organisations develops and maintains gender. Therefore, both organisational practices and the practice of gender influence one another.

Nentwich and Kelan (2014) identified four elements of doing gender including, gendered structures, hierarchies, identity and flexibility which construct and maintain gender within organisations. Firstly, gendered structures are linked to roles within organisations and the development of these gendered structures creates gendered identities. Therefore, for employees to succeed in a specific role they are required to link their gender identity to the gendered structures, for example, men working in early childhood struggle with "constructing masculinity" within the industry due to how feminine the job is perceived to be (Nentwich & Kelan, 2014, p. 125). This results in employees compromising their gender identity to better fit the gender which has been constructed for the role. Women in male-dominated industries adapt their gendered identity as a coping strategy, such as displaying masculine characteristics, acting as one of the boys and disregarding their femininity (A. Powell, Bagilhole, & Dainty, 2009).

Nentwich and Kelan (2014) found that gendered hierarchies rank women and men based on masculine characteristics. These masculine characteristics lead to the construction and maintenance of gender within organisations through symbolism. Thus, traits which are symbolised to be feminine were devalued in comparison to masculine traits. For example, interpersonal skills versus technical skills in the ICT industry. Nentwich and Kelan (2014) highlight that gender constructs are flexible and context-specific, therefore traits that are considered masculine or feminine can change within different contexts. Consequently, traits that are considered feminine in society, may not be considered feminine in a managerial context. An example of this is emotional labour, which is seen to be a feminine trait in roles such as nursing is seen as masculine and essential for roles such as litigation (Nentwich & Kelan,

2014). This is supported by (Aumais, 2017) research which highlights that gender should not be considered in micro isolation. However organisational and structural contexts must also be considered.

To understand how female leaders within the ICT industry can undo gender we must first identify how gender is constructed and maintained within the industry. The construction and maintenance of gender can be identified through the experiences and realities of females employed in the ICT industry. This includes their experiences based on the industry's organisational culture, organising processes and interactions (P. Y. Martin, 2003).

Within the ICT industry, three doing gender concepts have been identified including the ideal male worker, social interactions and organisational culture. These three concepts align with Nentwich & Kelan's (2014) themes as they identify how gendered structures and hierarchies such as social interactions, organisational cultures, the importance of technical skills and organisational processes require females to compromise their gendered identities or become gender flexible to meet the requirements of the industry. Each of these three concepts will be discussed in turn.

Concept one: Ideal male worker

The culture of the ICT industry and the notion of the ideal male worker with no family responsibilities construct norms within the industry. This ideal male worker norm does not support work life balance and maintains gender constructs (Acker, 2006). These norms include the ability to work long hours, travel and be accessible 24 hours of the day (Holth, Bergman, & MacKenzie, 2017; Valk & Srinivasan, 2011).

There have been numerous studies (Crump et al., 2007; Holth, Bergman, & MacKenzie, 2017; K. Moore, Griffiths, Richardson, & Adam, 2008; Valk & Srinivasan, 2011) that highlighted there is a long hours work culture within the ICT industry. This is due to the nature of the industry which requires ICT professionals to be accessible 24/7 due to technology being constantly needed (Holth et al., 2017). These organisational structures and norms maintain assumptions that employees are 'ideal male workers' with little responsibility outside work, such as children or elderly caring responsibilities and household labour (Acker, 2006; Hari, 2017).

There have been clear narratives from women working within the ICT industry that these ideal male worker norms are still present and do not support women within the industry. Griffiths and Moore (2010) explain that the main reason women leave the ICT industry was because they struggled to maintain work life balance due to working long hours and having large workloads. Other reasons include the overall hostile nature of the ICT industry, ageism, dual roles, disabilities, and career change. This is supported by (Griffiths, Moore & Richardson's, 2007) research that found 65% of employees worked over ten hours a day.

As the industry is focused on increasing their representation of females, there has been a push to introduce work-life balance policies to disrupt these norms (Hari, 2017). However, (Hari's, 2017, p.99) research found that the implementation of these work-life balance policies and practices have a "masculinist and heterosexist bias" due to the "gender composition" of the workforce and the way the ICT industry has shaped long hours culture, to be rewarding and part of the industry. Additionally, (Hari, 2017) argued that the work-life balance initiatives are weak as they are based on manager's discretion and are not usually formalised or supported by the organisation's culture.

The practice of work-life balance within the ICT industry has also been argued to impede the career progression of women within the industry. Servon and Visser (2011) highlight that if female employees take career breaks they are stereotyped by management as not being committed to their career. Thus, Servon and Visser (2011) suggest that ICT employers need to allow for a longer career ladder. Kirton and Robertson's (2018) research also highlights that the career progression of women within the ICT industry is hindered due to the gendered stereotypes and assumptions of women within the industry. Therefore, women are still socially judged for being the primary caregivers of their children and family. This in return negatively impacts all women in the industry by adding biases within recruitment and promotion processes. Work-life balance practices must aid in helping women exit and re-enter the ICT industry after they have had time off, due to the industry constantly developing and changing rapidly 24/7 (Griffiths, Moore, & Richardson, 2007). Despite the ICT industry offering these flexible work arrangements (Griffiths et al., 2007) found that within the ICT industry, 60% of mothers employed believed that the industry did not support work life balance. This is also shown by 51%

stating that the idea of pursuing flexible working schedules would decrease their pay or inhibit their chances of gaining promotions at work (Griffiths et al., 2007). Although the ICT industry is trying to address the ideal male worker norms and long work hour cultures there is little advantage in creating work-life balance policies, if they do not support career development or are not supported by the overall culture of the organisation (Griffiths et al., 2007).

Concept two: Social interactions

Within the ICT industry, social interaction has been a large influencer in the construction and maintenance of gender. Various research (Clayton et al., 2012; Griffiths, Moore, & Richardson, 2007; Kenny & Donnelly, 2019; Kirton & Robertson, 2018; McGee, 2018) has found different types of social interactions which create and maintain gender by reinforcing and creating stereotypes and assumptions of females within the industry which create additional barriers. These social interactions include overt discrimination, micro-aggressions, informal discrimination and negative assumptions on skills and capabilities.

Griffiths and Moore (2010) found that women within the UK ICT industry left due to four types of formal and informal social interactions. Formal social interactions included overt open comments, such as put downs in meetings and informal interactions for example female ICT professionals coming back from maternity leave and having no working space (exclusion). Informal social interactions included discriminatory and sexist jokes and slanderous comments (Griffiths and Moore (2010). Cater-Steel and Cater (2010) found that females within the ICT gaming industry also experienced sexism and discrimination. The sexism and discrimination that they experienced were overt. Male colleagues made open comments on them being the token girl, being excluded from career development trips due to their gender and having a tally system of the number of females that have cried (Cater-Steel & Cater, 2010).

The masculinity of the ICT industry is also emphasised by (Kirton & Robertson's, 2018) research which found that majority of the interviewed women working at one of UK's largest ICT firms had experienced both negative formal and informal social interactions. The experiences women faced aligned with definitions of direct sexism. This included being joked about as the only female in a team or in the room at the

time. Informal social interaction practices are shown through female leaders not being accepted in the workplace as they were not seen as the typical manager. This led to leadership behaviour bias from men within the organisation. It is important to note, the negative social interactions within male-dominated industries are not only displayed by men but other women also create barriers for each other. This can be through intra-gender microaggressions such as subtle daily messages which are belittling and do not support other women (Mavin, Grandy, & Williams, 2014) or more overtly through the Queen Bee syndrome where a female leader undermines and directly bullies other women (Derks, Ellemers, Laar, & Groot, 2011; Harvey, 2018).

Kirton and Robertson (2018) highlighted that although females within the ICT industry were a minority, not all of them felt excluded. This is due to them accepting the nature of the industry and being the "odd girl out" as this was the case for them within their entire university journey (Trauth, 2002). However, social interactions affected their day to day working relationships with male colleagues. To maintain working relationships with their male colleagues, female employees within the ICT organisations had to go out of their way to "meet men on their terms" (Kirton & Robertson, 2018, p. 165). This interaction shows that men hold authority within the ICT industry.

Additionally, Kirton & Robertson's (2018) research found that due to the masculine culture of the ICT industry this creates hidden gender biases towards the competence of men and negative stereotypes of women. These gendered biases which are linked to the industry's masculine culture include, having a result driven culture, competitiveness and individualism. The negative stereotypes of women include undermining the work and opinions of women, putting emphasis on their child care responsibilities and reinforcing the masculine characteristics within the culture of the industry (Alfrey & Twine, 2016; Crump et al., 2007). Kirton and Robertson (2018) also highlight that gendered stereotypes lead to assumptions of the skills and capability women hold in the ICT industry. This maintains and constructs gender by limiting the career development of women and simultaneously promoting the career development of men. In line with this McGee (2018) reinforced that career development for females in the ICT industry is hindered by gender bias and leadership bias.

Griffiths et al. (2007) highlighted that due to these gender biases women were conscious of their behaviour as they did not want to say the incorrect thing and be stereotyped as the 'stupid girl'. Women within the organisation also de-gendered themselves as they knew they were different but did not want their male colleagues to treat them differently. This de-gendering involved participating in masculine conversations about sport and trying to disconnect from their feminine stereotypes by adopting norms which are seen to be masculine (Kirton & Robertson, 2018). However, acting assertive and portraying the image of a strong woman only added to de-gendering themselves (Kirton & Robertson, 2018).

In addition to sexist comments and overt discrimination, women within ICT were constantly looked down upon by male colleagues despite how capable and skilled they were within their roles (Smith, 2013). Doubting the abilities of women within the ICT industry added to the maintenance of gender and women constantly felt like they had to prove and reinforce their competence to their male colleagues in which they would only use technical terms in conversations with men (Kenny & Donnelly, 2019; Smith, 2013). Women internally doubting one's abilities within a workplace has been previously discussed in the literature (Gill & Orgad, 2015; Howe-Walsh & Turnbull, 2016; Peterson, 2010). However, this is additional and is due to men questioning the abilities of women within the industry.

Assuming and questioning a women's, technical abilities was a key theme that emerged from Kenny & Donnelly's (2019) study of 57 technical female ICT professionals in the UK. The study found that the ICT industry was infused by men that held assumptions about their female colleague's technical abilities. These assumptions were held by both male colleagues and clients, who felt that women were better suited to housekeeping roles such as operations and project management due to their interpersonal and organisational skills. These gendered stereotypes were established through formal interactions, as men would act surprised if women were able to do technical jobs (Kenny & Donnelly, 2019). This in turn reinforces how the dominance of men in the ICT industry influences women's gender identity.

Kenny and Donnelly's (2019, p. 12) study highlighted that women are experiencing increased pressure to "accept the imposed behaviour" through this male dominance within the workplace. As the women are accepting this imposed behaviour, Kirton

and Robertson (2018) reinforce the idea that they are de-gendering themselves within the ICT industry. In contrast, Kenny and Donnelly (2019, p. 12) argued that females had to learn how to be a woman in a male environment by "adhering to established and emerging scripts". This immediately leads them to be outsiders or guests in their own industry. This links with Trauth's, (2002) research which highlights that women are used to being the "odd girl out" within the industry. Regardless, both Kenny & Donnelly's (2019); Kirton & Robertson's (2018) studies found that women conformed to the pressures of male dominance and the organisational culture rather than pressing for change which maintains gender.

Concept three: Organisational culture

Schein (2010) defines organisational culture as shared values and beliefs which are used within an organisation to solve problems. These shared values and beliefs have become accepted and create norms within an organisation. These norms then become embedded in daily organisational practices, processes and structures (Deal & Kennedy, 2000; Sáinz & Eccles, 2012). In 2002, Ahuja proposed a model which highlighted the barriers women face in the ICT industry within different stages of their career, including "career choices, persistence and advancement" (Ahuja, 2002, p. 20). The model highlighted how these social and structural factors interlink and affect women at all stages of their careers. Structural factors included organisational culture, lack of role models, networks and mentors and institutional structures. The social factors included social expectations and work life balance. Ahuja (2002) argued that these factors contribute to the leaky pipeline in which young women are pushed into the ICT industry but exit before their career fully develops.

Thus, male-dominated industries such as the ICT industry have developed organisational norms that reinforce masculinities. For example, having a hostile, competitive and ambitious environment, male employees holding technical roles, working long hours of work, being accessible 24 hours a day and travelling extensively (Comeau & Kemp, 2011; Crump et al., 2007; Ensmenger, 2010; Kenny & Donnelly, 2019). These norms disempower female employees as they have been embedded in organisational practices and structures which create and maintain gender.

A common organisational norm which reinforces masculinity is the important and highly valued technical expert (Comeau & Kemp, 2011; Ensmenger, 2010; Kenny & Donnelly, 2019). Comeau and Kemp (2011) argued that the stereotype of the technical expert within the ICT industry is based on gendered norms that associate masculinity with maths, the military and engineering. These industries emphasise the importance of becoming an expert in technical skills.

Kenny and Donnelly's (2019) research found that men within the ICT industry held negative assumptions about the technical skills of women, which leads to women being undermined. Kenny and Donnelly (2019) also found that due to the male dominance within the ICT industry women were excluded from business activities that allowed them to influence decision making. The emphasis on technical skills leads to task gendered segregation in which women are categorised into roles which involve feminine characteristics, such as soft and interpersonal skills rather than technical or senior leadership roles (Acker, 2012; Ruiz-Ben, 2007).

Therefore, organisational cultures within the industry have created desirable workplace attributes which are already gendered; there is a clear masculine expectation that dominates the industry which women are expected to adhere to (Nentwich & Kelan, 2014). An example of a gendered hierarchy is having technical skills, this reinforces that intellectual capabilities are linked to masculine work and characteristics (Nentwich & Kelan, 2014). This has led to two outcomes within the industry, firstly women maintaining the doing of gender by distancing themselves from technical roles and technology. In line with this (Kenny & Donnelly's, 2019) study found that 25 out of 57 females in the ICT industry embraced the stereotypes of females within the industry to leverage themselves into managerial and promotional roles, for example, Business Analyst roles. Although this is an example of how women use their gender identity to shape the ICT industry, this leads to positions which are typically held by females not being valued as highly as those held by men which also supports the gender pay gap within the ICT industry (Crump et al., 2007; Kirton & Robertson, 2018). In taking this soft-skill approach women are doing gender as they are participating in what is perceived as gender-appropriate work within the ICT industry.

Secondly, as femininity is perceived to be undesirable within a male-dominated environment, women in Kenny & Donnelly's (2019) study identified that they ended

up accepting the negative patterns of behaviour and assumptions within the industry rather than always pushing for change. Whereas, Trauth's (2002) research identified that women ended up portraying themselves as logical, less social than other women, competitive and highly ambitious to gain access and acceptance in this masculine culture. Consequently, these two scenarios create a double-bind for women working within the industry. The ICT industry requires women to either show that they are highly technical to be accepted in the industry or show soft and feminine skills which link back to their sex category.

Therefore, 'women in ICT' literature has identified there are specific structural, social influencers and organising processes within the ICT industry. This includes ideal male worker norms, long hours of work, lack of work life balance, negative social interactions and assumptions of skills and abilities. These social and organising processes are creating and maintaining gender within the ICT industry. These gendered barriers are maintained through the organisational culture of the ICT industry (Acker, 2006; Crump et al., 2007; Kirton & Robertson, 2018).

2.4 Undoing gender

Section 2.3 highlighted how gender is constructed and maintained through organisational practices and social interactions within the ICT industry. There has been some research within the doing gender literature that has directly linked doing gender to organisational contexts, organisational power, gendered organisations, inequality regimes and gender as a social structure (Acker, 2006). However, research on how gender can be undone within these organisational contexts is less prominent (Kelan, 2010).

Gender is constructed which enables it to be undone. The undoing of gender is the deconstruction of gender constructs. Therefore, organisations which are gendered and social interactions which maintain gender can be questioned and changed (Deutsch, 2007). There are two theoretical approaches within the creation of gender and how this links to undoing gender, this includes the ethnomethodological and post-structural approach. Deutsch (2007) argues that research on doing gender, which has identified the inequalities for women holds great importance, but the research agenda should now shift to the process of how gender can be undone. This will allow us to consider questions of doing gender and interactions and how this

can become less gendered, conditions of social interactions and how change can be achieved (Deutsch, 2007).

2.4.1 Ethnomethodological approach

West and Zimmerman (1987) have an ethnomethodological approach to gender. They define gender as being maintained through interactions and expressions, thus it is created through perceptions of how one should act based on their gendered norms. The ethnomethodological approach of gender is situational based and West and Zimmerman (1987) argue that gender may not be able to be undone due to societies sex categorisation of men and women. Kelan (2010) highlights that only a few authors have considered how gender can be undone from this perspective, due to the link of this approach to everyday situations through body language, speech and gestures. Within the ethnomethodological approach, gender is never going to be undone however it changes in different situations. Therefore, we choose to enact with gender or not. This approach considers that gender can only be undone if it is destabilised or sex categories become unimportant through social movements (Kelan, 2010).

An example of women trying to undo their gender by not wanting to enact within their gender is through Kelan's (2010) research of women in Swiss ICT organisations. This study found that women within the industry understood there was a gender issue but wanted to consider the industry as gender neutral. However, this can be problematic as these women are expected to become gender neutral to be seen as professional. This leads to women ignoring gendered barriers and issues within the industry and instead trying to fit the ideal male worker which is unattainable (Acker, 1990; Kelan, 2010). Thus, Kelan (2010) argued that these women were not trying to undo gender but undo their sex category which does not fix the barriers within the industry.

Therefore, trying to undo gender through the ethnomethodological approach is problematic as this approaches insistence on sex category renders taking action impossible. Although an unsuccessful undoing gender approach (Kelan, 2018) argues, that West & Zimmerman's (1987) ethnomethodological approach has been used to explain how gender inequality is continuous and still present in organisations and everyday society.

2.4.2 Post structural approach

Butler (2004) post-structural/discursive approach argues that gender is created through identification into a gendered binary which is enforced through gendered norms. Kelan (2010) found that a method of undoing gender through this approach is through questioning gender binaries. As the ICT industry in Switzerland is strongly male-dominated with 75 to 86 percent men, women working within this industry challenges gender norms. However, Kelan (2010) highlighted that there would be resistance with challenging this gender binary. For example, within this study, a female programmer was thought to be a secretary by a customer. This led to her being dismissed from the ICT industry and put in a role which the customer believed linked to her gender. This is based on the customers' stereotypes of women working within the ICT industry. This resistance is common in the ICT industry, for example, Kenny & Donnelly's (2019) research also found that female ICT professionals have been mistaken as part of the marketing, sales or human resources departments.

A. Powell et al. (2009) research, which interviewed female engineers found that to cope within the male-dominated industry women developed an anti-women approach. This included acting as one of the boys, showing their worth and accepting discrimination. A. Powell et al. (2009) highlighted that these coping strategies lead to women within the engineering industry conforming to the gender norms of the industry. Therefore, their survival within this industry maintains gender as these female engineers did not feel comfortable in questioning the masculine work culture to undo gender. Stainback, Kleiner, and Skaggs (2016), research found that women in senior leadership positions can act as change agents. This leads to a decrease in organisational gender segregation, due to the access that these senior leaders have to organisational power. The access to organisational power aids these women in undoing gender within gendered organisations by questioning gendered binaries and stereotypes put onto them. They challenged this by entering leadership positions, having the power to open the gates for other women and by questioning historical gender norms and assumptions within the industry.

McDonald's (2013) research which studied both male and female nursing students argued the importance of researching the experiences of both females and males

within an organisational context. As both genders construct, maintain and undo gender. McDonald's (2013) research argued that the undoing of gender does not mean that the gender norms within the industry are completely removed they are just being subverted. For example, females do gender within the nursing industry by putting a large emphasis on the characteristics within the role which are linked to being feminine, for example, compassion. This leads to females conforming to gendered stereotypes which they are held accountable for. Men constructed masculinities, within the nursing industry by separating themselves from women, for example, doing tasks which are masculine like heavy lifting or working with patients who were physically and verbally abusive (McDonald, 2013). Gender was undone by males within the nursing industry as they question the gendered norms which they are accountable for by being in the industry (McDonald, 2013). Therefore, instead of following masculine traits they highlight the importance of compassion and dissociating the masculine gender norms which they are responsible for. However, they did not do this fully as they still constructed masculinities by focusing on masculine tasks. Thus, gender norms are not being removed but subverted (McDonald, 2013).

This links directly to Kelan's (2010) research which highlighted that females within the ICT industry are undoing gender by questioning their gender norms by working within a male-dominated industry. Along with their presence in the industry, women in this field are also questioning gender binaries through their behaviour and identity. Kenny and Donnelly's (2019) study showed women are doing this through their assertive actions, emphasising their worth and wearing colourful clothes and skirts to work rather than trousers.

Therefore, within a post-structural approach gender can be subverted by both males and females questioning gender binaries, examples include when individuals work in industries in which they are a gendered minority, for example, male nurses or female police officers (McDonald, 2013; Morash & Haarr, 2012). However, Deutsch (2007) argues that this compliance and resistance theory to undoing gender makes it difficult to identify if gender inequalities are in fact being dismantled. Deutsch (2007, p. 114) emphasises that doing and undoing gender research continues to focus on the "persistence of inequality" rather than undoing gender through an interactional level. This is reflective of the doing gender research within the ICT

industry which identifies barriers rather than addressing change (Crump et al., 2007; Kenny & Donnelly, 2019; Kirton & Robertson, 2018; McGee, 2018; Nentwich & Kelan, 2014). Thus, Deutsch (2007) proposes that social interaction inquiries should be shifted to focus on change rather than just the presence of inequalities within industries and organisations. This focus shaped this thesis, of how gendered barriers, social interactions and assumptions can be mitigated rather than highlighting the barriers for females within male-dominated industries. This shapes the research question this thesis asks: *"how have senior female leaders shaped New Zealand's ICT through undoing gender?"*.

2.5 Chapter summary

This chapter firstly reviewed the current status of women within the ICT industry. The literature showed that there are clear equity and pragmatic benefits for females to join the ICT industry. However, the recruitment of females into New Zealand's ICT industry still remains low (Barker et al., 2006; Hunter, 2012). This is linked to both the decision making of young women and gendered serotypes which the industry holds (Clayton et al., 2012; Miliszewska & Moore, 2010). Despite the lack of recruitment of young women into the industry, this chapter also identified both the positive and negative experiences of females within the industry. The literature found that the masculine organisational culture, sexism and gendered stereotypes were widely experienced by females with the industry. However, the literature also highlighted that women who stayed within the ICT industry had strongly enjoyed the work they were doing.

Next, three doing gender concepts within the ICT industry were identified including, the ideal male worker, social interactions and organisational culture. These themes highlighted how gender can be created and maintained within the ICT industry. Next, two undoing gender methods were explained; the ethnomethodological and post-structural approach. This included enacting with gender, questioning gender binaries and acting as change agents within leadership positions. Although there is a significant body of literature that highlights the doing of gender and inequalities within the ICT industry, this thesis will explore the gap in the literature which is identifying how and if female leaders work to undo gender within the ICT industry. The following chapter identifies how the research is supported by an interpretive descriptive methodology.

Chapter Three: Methodology

3.1 Introduction

The previous chapter introduced the characteristics and context of New Zealand's ICT industry, it identified the current experiences of women within the ICT industry and highlighted two approaches of undoing gender. It acknowledged that women make up only 20% of New Zealand's ICT industry and that the average salary of New Zealand's ICT industry is $82,000 (Statistics New Zealand, 2018). Thus, this under representation is leading to equity and pragmatic issues for women and New Zealand. Women within the ICT industry undertake highly skilled, well-remunerated and challenging work however, negative gendered social interactions, stereotypes and barriers are still present and maintained within the industry. Lastly, the literature review introduced two undoing gender approaches, ethnomethodological and post-structural. It identified that there is a research gap of how gender can be undone within the ICT industry, by senior female leaders within this industry.

This chapter identifies the philosophical background and methodology which guides and shapes this research. This study followed a relativist ontology which was shaped by a constructivist epistemology. Due to this research exploring the experiences of senior female leaders within the ICT industry, an interpretivist descriptive methodology was employed within an interpretive paradigm. This chapter also identifies the positionality of the researcher, ethical considerations, data collection and the data analysis process. It concludes by identifying how trustworthiness and authenticity are established throughout the research process.

3.2 Research Aims

The purpose of this research is to answer and explore how have senior female leaders shaped New Zealand's ICT through undoing gender? It aims to understand their experiences of working in a male-dominated industry and the changes they have implemented. This research highlights their contributions in the hopes to influence practice. In addition to the main research question, this research poses three sub-questions:

1. What "doing gender" organisational and social structures have senior female leaders experienced within New Zealand's current ICT industry?

2. How have senior female leaders undone gender within New Zealand's ICT industry?

3. What practices, process, experiences and influences did senior female leaders draw, to undo gendered stereotypes?

3.3 Philosophical Background

To answer these research questions, the researcher needed to have a strong understanding of the study's philosophical background, as this guides the research process (Crotty, 1998; Gray, 2014). The study's philosophical assumptions, along with the research design and the research methods shaped the research (Creswell, 2013). This included the research ontology, epistemology, paradigm, methodology and methods. Each will be discussed in turn.

Ontology can be defined as how reality is created and what is seen to be true (Crotty, 1998; Grant & Giddings, 2002; Guba & Lincoln, 1994). This study aims to explore the lived experiences of senior female leaders in the ICT industry. Every participant's knowledge and reality is created through their own experiences, worldviews and assumptions (Guba & Lincoln, 1994). Therefore, there is no one singular reality (Gray, 2014). This directly links to a relativist ontology. A relativist ontology represents multiple realities that are socially and experientially constructed and can be altered (Guba & Lincoln, 1994). However, elements of people's realities are shared among cultures, contexts and social groups (Guba & Lincoln, 1994).

Within the research process, the epistemological position identifies the relationship between the researcher and participants while identifying what knowledge is and how this knowledge is created (Grant & Giddings, 2002; Gray, 2014). Within this study, knowledge is created through the lived realities and experiences shared by the participants. Therefore, this research followed a constructivist epistemology as knowledge and meaning was constructed through the participants' interactions with the world and their social contexts (Crotty, 1998). A constructivist epistemology assumes that knowledge and meaning are not discovered but is constructed. Thus, a constructivist researcher tries to understand and interpret a participant's knowledge and meanings towards the phenomenon being researched

(Creswell, 2013; Crotty, 1998). Gray (2014) highlights that a researcher and their participants can co-create findings through their interactions and interpretations.

A research paradigm is a set of beliefs which shapes the data collection, analysis and reporting of the research (Grant & Giddings, 2002; Gray, 2014). This study follows an interpretivist paradigm, which focuses on actively listening, interacting and relating to participants (Grant & Giddings, 2002; Gray, 2014). This allows the researcher to fully explore participants' experiences and in-depth information on the phenomenon being studied. This directly links to this research topic as it examines the individual experiences of senior female leaders working within New Zealand's ICT industry. The aims of the research and philosophical background required a methodology which would not only listen to the voices of the participants but also interpret their experiences (Smythe, 2012). Thus, the interpretive descriptive methodology was chosen and is further discussed in the next section.

3.4 Methodology

Grant and Giddings (2002) highlight that a methodology guides the method of inquiry within research and is grounded in the researcher's ontology and epistemology. In 1997, Thorne, Reimer Kirkham, and MacDonald-Emes developed the interpretive descriptive methodology. This methodology was developed to assist in understanding clinical and health issues within nursing (Thorne, Kirkham, & O'Flynn-Magee, 2004). The methodology was derived from other methodologies including ethnography, phenomenology and grounded theory (Thorne et al., 2004).

There are three main philosophical underpinnings which shape the interpretive descriptive methodology which directly links to this research. This includes the concepts of there not being one singular reality, the researcher and participants influence each other within the research and there are no prior theoretical assumptions which cover the various realities (Smythe, 2012; Thorne et al., 2004). This directly links to the study's philosophical orientation as outlined in the previous section. Thus, within an interpretive descriptive methodology meaning is constructed from participants' knowledge, interactions and experiences while the researcher actively listens, interacts and relates to the participants (Smythe, 2012).

It has been identified that interpretive descriptive is a suitable methodology for studies which focus on a small sample, that aim to collect detailed data, identify

participants' characteristics and develop patterns and themes (Smythe, 2012; Thorne et al., 2004). Thus, this methodology aims to hear and describe the voices of participants and interpret findings which are based on participants' experiences (Smythe, 2012). Interpretive descriptive also allows for contextual information, concerning the dataset and the applicability of the research to other contexts (Hunt, 2009). It is noted that within the interpretive descriptive methodology, researcher reflexivity and awareness of biases is essential. This will be discussed in sections 3.7.4 and 3.9. (Hunt, 2009; Thorne et al., 2004). Therefore, interpretive descriptive was the chosen methodology as it linked directly with the study's philosophical orientation and the aims of the research. This included hearing and prioritising the voices of women within an industry where they are underrepresented. This methodology allows their voices and experiences to identify the organisational and social structures which maintain and do gender within the ICT industry and how they have worked to undo gender.

3.5 Researcher reflexivity and positionality

As highlighted above, within an interpretive descriptive methodology the researcher must be reflective and aware of their biases. The researcher practiced reflexivity by putting measures in place prior to the data collection such as understanding her biases and positionality. This aided her in not projecting her viewpoints and assumptions onto the participants. Reflexivity was also achieved in the data collection stage through a reflective journal. It is important to note, that within an interpretive paradigm it is not a researcher's aim to be fully objective in comparison to a positivist paradigm (Snape & Spencer, 2003). However, researcher reflectivity is essential as this allows the readers to assess if participants voices and lived experiences have been correctly represented throughout the research (James, 2012).

In line with the researcher understanding her biases, she must also understand her positionality. Positionality is defined as where the researcher stands in relation to the phenomenon being studied, the research context and similarities and differences with participants (Greene, 2014). Within qualitative research, the researcher usually has some relation to the social group they are investigating (J. Moore, 2012). Thus, it is of importance that the researcher identifies their "physical

and psychological" distance from the phenomenon being studied (J. Moore, 2012, p. 11).

Hayfield and Huxley (2015) argue that a researcher's positionality affects the epistemology of the research as their position and the participants' experiences can influence the knowledge which is created. Although within a constructivist epistemology, knowledge and meaning is constructed through the participants' interactions with the world and their social contexts, the researcher's positionality can influence the creation of interview questions, data analysis and findings of the research (Crotty, 1998). As highlighted by (Gray, 2014) a researcher can co-create findings through their interactions and interpretations. Thus, it is of importance for a researcher to identify their positionality.

A researcher is considered an insider if they have the same characteristics as the group being investigated, for example, their gender, ethnicity or occupation (Hayfield & Huxley, 2015). Within this study, the researcher is both an insider and outsider, as she is of the same gender as the participants. However, she is not a senior leader and has never worked or studied in the ICT industry. It is important to note that within this study the researcher's insider position through gender is not as significant as if she was an insider through leadership positions or within the same industry.

As an insider, the researcher's positionality created advantages for the study, as she had awareness of the lived experiences of the participants through her advocacy work in diversity and inclusion. This allowed rich data collection and also helped the researcher with developing trust with the participants (Hayfield & Huxley, 2015). Additionally, this awareness aided in the development of the research question, interview protocol, recruitment and data collection. The researcher was also portrayed as an outsider as she had never worked or studied in the ICT industry. However, this was of advantage for the study as her lack of knowledge of the industry meant she asked for greater contextual information from participants rather than making assumptions. This enabled the context of the phenomenon to be explained and understood more in-depth. Thus, the researcher did not overlook parts of the data that an insider would (Hayfield & Huxley, 2015).

3.6 Ethical Considerations

As highlighted in section 3.5, the researcher had never worked or studied in the ICT industry and had no senior leadership experience. Thus, she needed to consult with a senior female leader within the ICT industry before the commencement of the study. This consultation helped shape the research process as it informed the researcher of the culture and the different roles within the ICT industry which includes the technical and managerial role and the different ways these influences the ICT industry. Care was taken to minimise risk and discomfort for participants. This included interviewing participants in public areas, advising participants they had the right to not answer questions or end the interview at any time, ensuring participants' confidentiality is maintained by using pseudonyms and sending transcripts for approval to participants before data analysis commenced.

All research processes and procedures followed the Auckland University of Technology Ethics Committee (AUTEC) ethical guidelines to protect participants. Ethical approval was granted on the 29th of January 2019. (Appendix 2: Letter of ethics approval).

3.7 Data Collection

This section outlines the process of data collection used throughout the research. It justifies why convenience sampling was the chosen method and how this links to the researcher's methodology. This is followed by the recruitment practices and the selection criteria for participants. It also identifies the characteristics of the participants interviewed for this research, the interview protocol which was used and the consultation process of the research. Finally, it identifies the data collection method of twelve semi-structured interviews.

3.7.1 Sampling and recruitment

Convenience sampling was chosen to identify participants for this study. Convenience sampling is the process where the researcher evaluates potential participants who are willing to participate in the research by close proximity and accessibility (Etikan, Musa, & Alkassim, 2016; Thorne, 2008). Firstly, this sampling method was chosen as it fits with the interpretive descriptive research methodology. Convenience sampling allowed the shared experiences of the participants to be described, which directly links to the interpretive descriptive

methodology (Thorne, 2008). Secondly, the interpretive descriptive methodology and convenience sampling do not focus on generalisability but instead focuses on the experiences of participants sampled. Thus, convenience sampling was suitable for this research due to time and cost restrictions (Gray, 2014).

Participants were recruited into the study through the researcher's professional and personal networks. The research was advertised through the researcher's social media channels and via email, to both social and professional networks (Appendix 3: Advertisement). Once participants expressed their interest, they were sent an email highlighting the aims of the research, the commitment required, selection criteria and the next steps involved for this research. The email also included the Participant Information Sheet which highlighted the purpose of the research, how privacy would be maintained, any associated risks and the end-use of the research to potential participants (Appendix 4: Participant Information Sheet). Once the participants agreed to partake in the research, they were provided with a consent form. This needed to be signed before the interview commenced (Appendix 5: Consent Form). To be accepted into the study, all the participants had to meet the following selection criteria:

1. Participants of this research must have a minimum of two years' experience working in a leadership role within the ICT industry.

It was essential for participants to have at least two years' experience as this allowed enough time in leadership to create changes within the industry. In addition to convenience sampling, snowballing sampling was employed. Participants made referrals of other female leaders in the ICT industry who would be of interest in this study (Noy, 2008). Thus, snowball sampling allowed this research to reach participants who were not easily accessible or aware of the research.

3.7.2 Sample characteristics

The data collection criteria for this research included senior female leaders with two to five years of technical leadership experience within the ICT industry. Twelve participants were interviewed for this study, six were interviewed in Wellington and four in Auckland. Two participants were currently not working in the ICT industry.

Eight out of twelve participants believed they "fell into the ICT industry". They saw the ICT industry as a newly developing industry with opportunity. The remaining

four participants actively pursued careers in the ICT industry. The participants who pursued careers within the industry had different motivators. For Megan and Julia, their fathers were their motivators, for Michelle, it was her friends and lastly, for Georgia, it was the opportunity and her fascination with ICT. With regards to formal education, six participants started in the ICT industry with a formal tertiary qualification. Four of these participants had qualifications in ICT. The other two had qualifications in Engineering and Arts. Three of the participants obtained qualifications while working in the ICT industry and the remaining three participants do not hold current tertiary qualifications.

Regarding career development three out of the twelve participants believed that their careers were linear. The remaining nine participants believed it was due to their rare skill sets and taking advantage of different opportunities. However, all participants highlighted that the ICT industry is a fast-paced industry, which requires continuous learning.

Participants characteristics will be presented in Table 1 below.

Table 1. Participant Characteristics

*Pseudonyms have been used to maintain participants' confidentiality

Participant	Length in ICT	Length in leadership	All formal tertiary qualification	Current role
Julia*	24 years	7 years	One year at Polytech	Portfolio Manager
Lucy*	35 years	20 years	Bachelor of Technology MBA	Chief Information officer
Daisy*	18 years	10 years	NA	Managing Director (most recent leadership role)
Jess*	10-12 years	10 years	NA	Strategy Manager
Alex*	18 years	5 years	Bachelor of Engineering MBA	CEO
Michelle*	13 years	6 years	Bachelor of Technology Certificate in Management	Infrastructure Operations Manager
Kate*	7 years	9 years	NA	Head of Digital
Georgia *	25 years	18 years	Bachelor of Technology Master of Technology	Senior Academic

			PhD	
Sarah*	25 years	20 years	MBA	Head of Digital
Rose*	32 years	27 years	Bachelor of Arts	General Manager of Operations
Charli*	23 years	20 years	MBA Certificate of management studies	Digital workplace services manager
Megan*	15 years	5 years	Bachelor of Computer Engineering Master of Computer Engineering PhD	Academic

3.7.3 Semi-structured interviews

Semi-structured interviews were used as the data collection method to interview twelve senior female leaders in New Zealand's ICT industry. Semi-structured interviews were chosen as it allowed the researcher to probe new questions from the participants' answers. This allowed flexibility throughout the interview and for participants' experiences to be explained in rich detail (Rubin & Rubin, 2005).

Before data collection commenced an interview protocol was developed and approved by the researcher's supervisors (Appendix 6: Interview Protocol). This interview protocol included the interview questions and highlighted steps the researcher should take pre, during and post the interviews. Additionally, the researcher consulted with a senior female leader within the ICT industry before data collection commenced. This consultation provided insights and context of the ICT industry which further shaped the researcher's interview questions. Once the researcher's supervisors approved the interview protocol and the consultation was completed recruitment and data collection commenced.

The researcher conducted twelve semi-structured interviews with female leaders in New Zealand's ICT industry. These interviews were held in public areas to maintain the safety for both the researcher and participants (Gray, 2014). Each 60-minute interview was conducted in English and took place at a time and place which best suited the participant. Before each interview commenced the researcher reiterated the purpose of the study and any key information from the participant information sheet to the participant. Participants were reminded that their participation was

voluntary, they could halt the interview at any time and did not have to answer questions they were not comfortable with. The researcher also explained that she would be taking field notes throughout the interview and that it would be recorded. The participants signed consent forms before the interviews commenced.

The researcher started the interview by asking about the participants about their motivations and career experiences of working in the ICT industry. This allowed the opportunity for the participants to explain their early experiences and for the researcher to gain more detailed information on the context of their career experiences. Further questions regarding their career successes, barriers and the organisational culture they work within were asked. Lastly, the researcher asked the participants about changes they have seen in the industry, if they contributed to this change, and what change still needs to occur.

During the interview it was essential that the researcher took care probing open-ended questions, letting participants finish their sentences and take the time to recall their experiences (Rubin & Rubin, 2005). During the interview, the researcher made field notes on non-verbal cues such as the participant's hesitation to answer questions, their facial expressions, gestures and body language. This assisted in data analysis as it allowed the researcher to attach context to participants' experiences (Rubin & Rubin, 2005).

3.8 Data analysis

This section explains the data analysis process employed. Firstly, it identifies how the data was transcribed for analysis followed by the links made between thematic analysis and the researcher's philosophical and theoretical orientation. Secondly, it identifies the six thematic analysis steps the researcher followed to develop open codes from the dataset and how these codes emerged into themes. As highlighted by (Braun & Clarke, 2006), it is important to ensure the reader is aware of the data analysis process, as this allows the research to be evaluated and compared to other research in the same field. This leads to the transferability of the research onto others who want to conduct similar projects in the future.

3.8.1 Transcribing the Data

The digitally recorded interview files were sent to professional transcriber once all twelve interviews were completed (Appendix 7: Transcriber Confidentiality

Agreement). The twelve interviews were transcribed verbatim and returned to the researcher. The researcher checked and re-listened to all the digitally recorded interview files against the transcripts various times. This allowed for accuracy when checking the data and also allowed the researcher to become familiar with the data, which is essential in thematic analysis (Braun & Clarke, 2006). When the researcher was satisfied that the transcripts and digitally recorded interview files matched, she reviewed the data to ensure it would not identify the participants. Pseudonyms were applied to ensure participant anonymity and confidentially (Henn, Weinstein, & Foard, 2006). Each participant was sent their transcripts to check and review before data analysis could commence. This also increased the rigour of the qualitative research as it allowed the participants to clarify, correct and approve their contributions to the research and enables the rights of the participant's to be maintained (Hagens, Dobrow, & Chafe, 2009).

3.8.2 Thematic Analysis

Thematic analysis was chosen to analyse the data. Thematic analysis aims to organise the data collected by identifying and reporting on the themes and patterns found (Braun & Clarke, 2006; Liamputtong, 2009). It is a qualitative data analysis method which focuses on the interpretation of datasets, intending to make statements of direct or indirect levels of meaning.

Thematic analysis also allows similarity, differences and relationships between the data to be examined (Gibson & Brown, 2009). It enables a rich description of data sets and interpretation of the research topic. This directly links to the interpretive descriptive methodology, which aims to describe and interpret participants voices (Braun & Clarke, 2006; Smythe, 2012). Therefore, thematic analysis was chosen as an appropriate data analysis approach for this research.

Braun and Clarke's (2006) six steps of thematic analysis were followed. This included:

1. Becoming familiar with the data through re-reading and writing down initial ideas (Braun & Clarke, 2006).
2. Developing initial codes linked directly to the research question (Braun & Clarke, 2006).
3. Aligning developed codes into themes (Braun & Clarke, 2006).

4. Evaluating and reviewing the themes (Braun & Clarke, 2006).
5. Defining and naming the themes and ensuring they link directly to the codes (Braun & Clarke, 2006).
6. Reporting data analysis (Braun & Clarke, 2006).

The researcher began the process of data analysis by re-reading the transcripts. Each transcript was re-read a minimum of three times as this allows the researcher to be immersed in the data (Braun & Clarke, 2006). This data immersion allowed the researcher to gain an understanding of the lived experiences of the participants and grasp the data in its full entirety.

The next step involved the researcher making one-page summaries including the field notes for each transcript. These summaries held great value to the researcher as it allowed the main points of each transcript to be identified and collated in a succinct manner (Harding, 2013). To compare the summaries against one another, the constant comparative method was used. This method identified similarities, differences, patterns and meanings between the data which aided in the initial development of the codes (Harding, 2013). An inductive and bottom-up approach to coding was used as the research was not testing theories, but building on theory (Braun & Clarke, 2006; Thorne, 2016).

Once the initial codes of all transcripts were created, the researcher re-read the transcripts, summaries and field notes to review the initial codes. This allowed the researcher to identify codes which were originally individual for example biases, railroading, overt discrimination and collapse them into a final code 'social interactions'. During the reviewing stage, codes with similar meanings and patterns were categorised together. Each category was clearly defined to ensure that the codes were correctly aligned within their category. Therefore, the coding process was shaped by the meaning of codes, influencing the recoding, categorisation and organisation of codes (Braun & Clarke, 2006; Saldaña, 2013).

The researcher themed the data once the final categorisation was completed. As highlighted by (Saldaña, 2013), themes are derived from coding and categorisation. The development of themes derived from the linked patterns and meanings between categories. Latent theming was used to identify themes. The researcher focused on the conceptualisation of ideas, values and underlying perceptions of the

semantic data, which links to an interpretive descriptive methodology, rather than just focusing on explicit elements of the data (Boyatzis, 1998; Braun & Clarke, 2006; Saldaña, 2013).

3.9 Establishing Trustworthiness and Authenticity

Establishing trustworthiness and authenticity was essential throughout this research, as it allows readers to assess if the research can be trusted or not (Cope, 2014). Trustworthiness focuses on practicing confirmability, transferability and creditability throughout the research. Whereas, authenticity focuses on whether the participants' voices and lived experiences have been accurately represented throughout the research (James, 2012). As discussed in section 3.5 the researcher practiced reflexivity by being aware of her biases, positionality and through a reflective journal which allowed her to maintain authenticity throughout the research and aided in maintaining academic rigour (Cope, 2014). Within this study confirmability, transferability and creditability were actively practiced, as discussed below.

Firstly, confirmability is defined as the process in which the researcher has removed their biases and personal viewpoints when interpreting research data (Cope, 2014). Gray (2014) highlights that this can be achieved through an audit, which identifies the links between the dataset and the researcher's interpretations. The researcher achieved confirmability by reflecting on her biases. Thus, the preconceptions of the research topic were set aside (Tufford & Newman, 2010). This allowed the researcher to not project her preconceptions of the research topic onto her participants, which was essential in this study so that her preconceptions did not interfere with the voices and experiences of participants. To further practice confirmability the researcher used a reflective journal as discussed in section 3.5. During the data collection and analysis stages, the researcher outlined her experiences, thought processes, assumptions and biases through reflexivity (Ortlipp, 2008). The reflective journal was then used to audit the interpretations and findings of the dataset.

Secondly, the researcher practiced transferability throughout the research. Transferability is defined as findings which can be transferred to other contexts, groups and research settings (Cope, 2014). This research focused on providing rich data on the research topic rather than on generalisability. However, transferability

was achieved due to the use of thick descriptions (Cope, 2014). This research highlighted thick descriptions on participant characteristics, the research context, research methods and throughout the findings. These thick descriptions allow other researchers to evaluate if this research could be transferred to their own research contexts.

Lastly, credibility refers to the truth of the data. It focuses on whether participants' truths have been correctly represented in the findings (Cope, 2014). To achieve credibility, Cope (2014) highlights the use of an audit trail as well as active engagement with participants. An audit trail was achieved through the researcher's use of a reflective journal. Furthermore, active engagement with participants was demonstrated through the researcher asking participants to check their transcripts before data analysis commenced.

3.10 Chapter summary

In conclusion, this chapter identified how the researcher's philosophical orientation guided this research. It explained that a relativist ontology was appropriate as it was understood that the experiences of ICT and gender are different for each participant. This links to a constructivist epistemology where knowledge and meaning are constructed through participants' experiences and interactions which links to an interpretivist paradigm where the researcher actively listens, interacts and relates to the participants. Next, this chapter evaluated how the philosophical orientation and aims of the research are supported by an interpretive descriptive methodology. This was followed by the researcher identifying her positionality as both an insider and outsider of the research. This allowed the reader to establish how the researcher's positionality would affect the research.

This provided detail of the data collection process, including the use of convenience sampling, the selection criteria, sample characteristics, interview protocol, consultation, and semi-structured interviews. It justified the use of thematic analysis as this method allowed the researcher to identify similarity, differences and relationships between the data and aligned with the study's philosophical orientation and methodology. Lastly, this chapter identified how trustworthiness and authenticity were maintained throughout the entire research process and the importance of this for participants and readers of this research.

Chapter Four: Findings

4.1 Introduction

As discussed in the previous chapter thematic analysis was used to analyse the data collected. This allowed the similarity, differences and relationships between the data to be examined (Braun & Clarke, 2006; Gibson & Brown, 2009). This chapter presents the findings from twelve semi-structured interviews with senior female leaders in New Zealand's ICT industry.

The results of this study are presented as four main themes, which are centred on the experiences of senior female leaders working within a male-dominated industry and the changes they have made within the ICT industry. The four themes are: 'doing gender', 'calling it out', 'women shaping the industry' and 'influences for undoing gender'. Sub-themes were identified within each theme, as detailed in table two below. Each theme will be discussed in turn.

Table 2. Summary of Themes

Theme	Sub-theme	Description
Doing Gender	Social interactions	Participants identified that social interactions from male colleagues maintain gendered constructs.
	Other female leaders	The barriers caused by other female leaders in the ICT industry through negative social interactions.
	Soft Skills vs Technical skills	Women in the ICT industry choosing soft roles rather than technical roles.
Calling it out	Calling it out	Calling out social interactions and practices which maintain and construct gender.
Women shaping the industry	Using minority as an advantage	Participants used 'being the only women' to their advantage in work situations.

	Visibility in the industry	The representation of women within the ICT industry is breaking the norms by increasing visibility.
	Supporting other women	Participants supported other women through mentoring and creating support groups and networks.
Influences for undoing gender	Personal values	The values which motivated women to act as change agents within the industry.
	Other leaders	The support from other leaders motivated women to create change.
	Organisational culture	A positive organisational culture enabled and supported participants in undoing gender.

4.2 Doing Gender

Through their experiences participants identified behaviours which construct and maintain gender within the ICT industry. These included male colleagues' social interactions, the behaviour of other females in the ICT industry and women choosing soft skilled roles rather than technical roles. Participants highlighted that they have experienced displays of misogynistic behaviour including, the old boys' club, sexist comments and the lack of respect for women. However, they explained that in comparison to earlier in their career this behaviour is becoming less direct and less common within the industry. Nevertheless, their experiences highlighted that male colleagues' social interactions promote gender stereotypes in the industry.

Sarah highlighted that one of the recent challenges she faces working in the ICT industry is that male leaders in the industry do not know how to socially interact with women appropriately. She explained: "*My current issues or my current experiences are that they just don't know how to deal with the dynamic of having a woman in a room full of blokes".*

She explained that this is due to male colleagues moving from roles that have little interaction, and are based on technical elements:

> *My most recent example is dealing with new managers that have just moved into CIO or COO roles that have never worked with a woman before and they really just don't know how to talk to us. They don't know how to communicate, they don't know how to listen or anything of those kind of things because they've been in a telecommunications area for all of their life, so it's all been quite binary ones and zeros and circuits and that's how it works. Then you deal with a different person on your team and you've been dealing with blokes for all of your career as well. (Sarah).*

Similarly, Megan has experienced that she finds it difficult for men to give women within the industry respect. Additionally, they display behaviours which are offensive to women:

> *It means that every now and then, and unfortunately in my case, I very often see that, you don't really get any respect from your male colleague and at the same time there is that unconscious bias that's going on, and they don't really know that they don't really behave nice or that was offensive to the women.*

Kate provided an example of a conversation with a male colleague where he made assumptions about her child care responsibilities based on her gender:

> *But look there's been other times. I had someone walk into a room and go oh I don't know when school holidays is, Kate you're a mum, when is school holidays. Well I don't know, cause I actually I'm working full time too. So, you have also got children. So it's little things like that.*

In line with Megan and Kate's comments, Julia highlighted that male colleagues do not know how to, and do not want to, socially interact with female leaders:

> *Yeah, it was, our engineering section. They're very much who is this chick that's coming in? Who is she to tell us what to do? My ways work, my ways are good, they've worked for many years, why are we trying to shake this up? I think it gets exasperated more being a woman because not only are they being told to do or asked to try new ways of working, they're being told by a female when they definitely don't perceive as an equivalent, so yes, it's been an interesting journey.*

Jess has also had similar leadership bias experiences from male stakeholders in the ICT industry who did not want to take her change messaging seriously:

> *Oh absolutely! No, two ways about it, there is no, two ways about it. Particularly in the retail industry it's really male driven, really male driven. So, I'm thinking my stakeholders have had to try and work with. That's been a real struggle for me. And not just me but for other female leaders I think particularly in the retail again, very male dominated. And I guess the messaging from a woman about a change and how we are going to do things doesn't seem to go down as well.*

These negative behaviours were displayed by both male and female colleagues within the ICT industry. Participants highlighted that the negative behaviours of other females added additional barriers within the industry. These social interactions and behaviours from women-maintained gender stereotypes and the barriers created by men within the industry. These behaviours included disempowerment of other women, lack of support, undermining behaviour and bullying.

For example, Charli articulated that she had experienced non-supportive female leaders early on in her career. Additionally, she highlighted that these women were aware of their behaviours:

> *I think attitudes of existing leaders around you can be an obstacle and that hasn't necessarily been just male leaders for me. Earlier on in (organisation's name), the barriers I had around me were women leaders, not very supportive. In fact, the opposite of supportive, to the point where one group was called the Witches Den, and I think they knew.*

Julia had also experienced a lack of support from other women in the industry. She emphasised that women tend to not support other women who are doing better than them. This in return creates additional barriers for women in the industry:

> *Instead of enabling and empowering and helping we almost hurt ourselves by trying to take down the other person. I don't know I would see that behaviour in a man necessarily doing that to another man, so we by essence make it harder for ourselves than it needs to be, especially if they have a feeling, you know, I'm an equal to that person, they shouldn't go further, right? Rather than, hey, this person's doing awesome, how can I help? I think until we change that attitude as well and we help support and empower other women, we're going to continue to run into problems.*

Similarly, Rose highlighted that there have been female leaders within the industry who do not support, grow, or enable their female staff. She articulated that these experiences have influenced her leadership style to be different:

> *I truly believe that in business there's really two types of female leaders, ones that want to grow everyone and take everyone with them, and those that are actually worse than any man you've ever met. I think some of those interactions with those women have really defined the fact that I do not want to be like that. They've actually been probably more brutal than some of the things that the men have done.*

Alex detailed an experience where she encountered a female leader who was threatened by her. This led to her leader putting up barriers for Alex throughout her career, including putting her on a list for redundancies. Which in return lead to Alex leaving the ICT industry:

> *It is the reason that I ended up leaving [organisations name]...I reported to our country manager here and online to this woman in Australia who I had some issues with, and a lot of people had issues with. We used to battle... So we battled constantly and it's interesting, she tried once to get rid of me... She was stopped. Then we were coming in for another round of redundancies and I probably should have clicked that she was trying to put me on the list.*

The lack of support participants received from other females in the industry was a reoccurring barrier. However, Sarah explained she has had supportive female leaders before which has encouraged her to voice her opinion more. She highlighted that her leader is cognisant of the barriers experienced by females in the industry therefore, she goes out of her way to support Sarah:

> *On my SLT there's two women and interestingly enough up until December last year we had a male leader and now we've got a female leader, an acting one, I feel I can actually talk more, I can contribute more, because my boss is female and she supports and lets me talk more, whereas the others talk over me all the time, so there's that. Also if there's another woman in your group who is cognisant and aware, that can actually help the other woman succeed. So they'll go hey, she hasn't finished talking. What were you saying? There's that kind of stuff but I do that for everybody regardless of their gender.*

Thus, Sarah's experience highlights how influential having a supportive female leader within a male-dominated industry can be. However, a majority of participants

detailed their experiences of undermining behaviour, loss of femininity and bullying from other females in the industry.

Daisy recalled an experience where a female supplier assumed she was a receptionist:

> *I'm sitting there one day and the phone rings and I pick the phone up...good morning, Debbie speaking, can I help you? The person says can I speak to Sam please, who was one of the salespeople at the time. I said, no sorry, he's not available, may I help you? Oh I'm sorry I don't think the receptionist could assist me. I went, I actually own the business and if I can't help you I'm not sure there's actually anybody that can... it was a female supplier (laughs)... It was like really? You're a woman and you're making an assumption that another woman picking up the phone is a receptionist, well done.*

Jess described that she has seen senior leaders change their behaviour over time, and appear to adapt to the gendered expectations of the role. This included dressing more masculine, being overly assertive, hiding their soft skills and emphasising their technical skills. Jess perceived this to be women becoming more masculine, and losing their femininity:

> *I have seen some women when they have got to there and they have become ugly. I think they've lost that along the way. Yeah they have lost it and they have become this beast that you know, I don't think you need to be and I don't think that's a good perception. I think when they become like that it actually doesn't do women any good. They don't do us any favours what so ever... You don't need to toss away being a female to actually get to the top.*

Sarah highlighted the more recent bullying behaviour she has seen is from females rather than males within the industry. This may be due to females' bullying being more overt than the bullying that is displayed by men, and therefore potentially noticed more:

> *We've had people say bullying and things like that and honestly the bullying is not coming from men and it's probably more from the women. There's been more complaints about women doing it than men. In fact, the last two that I've had to sit in on have been women.*

Therefore, the social interactions, gendered assumptions, lack of support and disempowerment displayed by other females within the ICT industry has maintained gendered barriers for participants. However, it is important to note gender is not only maintained by the negative behaviours of males and females

within the industry, but it is also maintained by the lack of women in technical roles in the ICT industry.

Charli highlighted that the previous organisation she worked for only two women in the technical infrastructure field: *"There's not quite a good spread yet. When it comes to stuff like infrastructure… But my good friend at [organisations name] runs one of the infrastructure support teams, one of the server teams, and she is one woman out of two in 150 [staff]."*

Daisy, whose entire career was based in the infrastructure field believes the lack of women in the specialisation is due to it being highly technical and niche:

> *Infrastructure, because it's quite hardware based, is quite niche so there's not a lot of women in it. In fact I've only seen in my career one other women engineer who has come through and she was only with us for about a year and she came out of the army, so we don't get them very often.*

Julia highlighted that the lack of women in the infrastructure field is due to the physical elements of the role. This included the shifting and manual maintenance of heavy computers. However, she reinforces that women focus on the operational management of these roles for example co-ordination and there is still a lack of women in technical roles which do not require physical labour:

> *Even just if you look at things like service desk and kind of instant managery style stuff and then you look at, hey, here's a technical guy doing a whole bunch of infrastructure repair and labour physically onsite, taking stuff to and from. That's an example of one of our areas that is – I don't even think there's a woman working within that section within that team. There's like a, oh yes, women can do all the coordination stuff. Even our developers are still… there's a lot more developers that are male than there are female.*

In comparison to the infrastructure field, participants identified that there is a large representation of females in soft skill roles. Charli explained: *"If you looked at the service management space, actually, at [organisations name], and I can't talk for anywhere else, it tends to be more female dominated…Service delivery, account delivery, process and Business Analyst (BA) stuff, there tends to be more women in that space. Maybe that's the soft skills."* Jess reinforced this and explained that: *"Females in IT tend to be in the softer roles like the change management type roles. They can do the BA type roles you don't see a lot in the tech space."*

She also highlighted that there is a lack of women coming into the technical area of ICT:

> *Yeah, you know particularly seeing with all the people that we're getting there with the digital world I haven't seen many females in there. I don't know why they're not picking it up because it's where they should be going. Because that's where the market is going so that's where they need to go.*

Julia highlighted that gender biases are still prevalent within certain roles in the ICT industry. This makes it difficult for women to enter technical roles through the same pathway as men:

> *There's lots of roles that are probably still seen a little bit more as male dominated potentially than female dominated. I think as a young woman, you possibly have to have a slightly different path to get in. You can't necessarily just take the hugely technical spot that maybe men just get by default and unfortunately, that is still there a bit.*

Similarly, Kate remarked that there has not been any significant increase in the number of women in technical roles over the period of her career:

> *I haven't seen any change. I mean apart from the fact that the government is trying to get women into ICT. But I haven't seen that change from a technical perspective. I haven't seen more women testers, or more female developers. I've seen the same number of Product Managers (PM) and BA's come through. But I'm not seeing those women come through in technical.*

From a tertiary education perspective Georgia highlighted that many women in the industry have come through non-traditional paths: *"So with quite a few women coming in are coming from other areas than ICT areas, which is valuable, but we also have to value the technical women as well".* Entrance through a non-traditional pathway makes it harder to promote formal tertiary education such as Computer Science to young women:

> *One difficulty I have is often if we get a successful woman in to talk to students she'll say I did a degree in psychology. And so all these girls are doing computer science and they think that "there is still no place for us?" "Why didn't I do psychology?" So I think that, so you will have women role models. But whether they look the same as you is a different issue.*

Therefore, behaviours such as male colleagues' social interactions, the behaviours of other female leaders in the industry and the lack of women in technical roles have reinforced that there is significant cultural change needed within the ICT industry. The industry is still very heavily male-dominated and maintains stereotypical assumptions of what men and women can do within the industry.

4.3 Calling it out

Participants responded to the challenges highlighted in section 4.2.1 by calling out gendered behaviour. This included calling out the social interactions which constructed and maintained gendered stereotypes and assumptions. Although calling out this behaviour was a shared experience among participants, how they called out these gendered stereotypes and assumptions were different. Approaches such as, calling out gendered behaviour through direct confrontation, a problem-solving approach, formally and informally through humour were all used.

Participants explained that when they were undermined or challenged by male colleagues some participants called out this behaviour through direct confrontation. Lucy explained:

> *Before I was in leadership roles, I definitely had a few challenges with blokes that I worked with and my approach was fairly robust, and I am great at even telling people to f*** off if they're annoying... Certainly, I had a few run ins with male colleagues in the early days when I was in my 20s. It didn't upset me. It kind of made me angry and I wasn't going to be pushed around and I made it bloody clear I wasn't going to be pushed around and I think they got the message.*

Alex highlighted that it was important to not allow others to discount your own efforts when working in a male-dominated industry. She also used direct confrontation when calling out the undermining behaviour of her male colleague:

> *When I moved into the GM role, I had a guy, who I also knew wanted the job, come up to me and he was like, oh that's really great that you got it, I know the company's really trying to get more women into management roles. I would say, if you look at the situation a lot of people would have gotten upset or internalised it or, oh my god, prejudice, prejudice. I just turned around and looked at him and went, actually, Matt, I got the job because I'm actually better than you and everyone else that applied. Thanks for that.*

Lucy and Alex did not explain how this direct confrontation was received by their colleagues, but they did emphasise that confrontation changed the negative behaviours of their male colleagues. In contrast to Lucy and Alex who used direct confrontation to defend themselves, Rose used direct confrontation to support other female colleagues who were experiencing sexiest behaviour. She actively listened to her female colleague and then used her position to inform a male colleague that his behaviour was unacceptable:

> *We had a young engineer who had a senior engineer come up to her and said to her, 'you're too pretty to be an engineer'. What happens is they come to me, I haul up the guy because they feel they can't complain, but they can. But I'll do the fighting for them because I don't think they're in a position to fight, given the power difference. We're basically knocking them into shape. At least if we got them at least to the point where they say it inside their head, not outside, and I think that's how we move forward as an organisation. They know that we don't tolerate it and they know that Ivan won't tolerate it.*

The use of direct confrontation made it clear to male colleagues that discriminatory behaviours would not be accepted by senior female leaders in the ICT industry. Direct confrontation allowed female leaders to stand their ground in difficult work environments and social situations.

However, more participants used a problem solving approach to call out social interactions, gendered assumptions and stereotypes. Charli articulates that she chooses to use this approach rather than other methods when calling out negative behaviours or situations because: *"There is an element of understanding that you have to let some stuff go. You can't fight every fight, so you pick your battles and you find a gentle way of doing it that is more a consultative approach"*. Charli picking and choosing her battles was linked to her not wanting to be the 'raving feminist' who called out issues constantly. This links to her fear, based on perceived gender assumptions within the industry, that if a female is addressing issues she is a 'raving feminist'.

Similarly, when Kate experienced *"not having a seat at the table"* she used a problem solving approach to call out this behaviour at a leadership meeting with her team:

> *My male colleagues all took a really, really long time to talk. Every one of them got to talk to their slides, and half an hour before we were actually due to finish the session got wrapped up. And not one of them noticed that I hadn't had an opportunity to speak... I was*

really, really angry. We talked about it at our next leadership meeting. And I was like so there's a couple ways we can handle this. I'm going to stop being the admin person. Just because I'm a woman doesn't mean that I should be doing all the admin, or the PowerPoint, or, and I'm not actually, no longer going to help you guys out. Or I'll continue to help you guys out but you guys actually can't forget me again. It's just not acceptable... They were all like oh my god I'm sorry, I'm like actually I don't want your apology, what I want is your commitment that you won't forget me again.

In contrast to a problem solving approach, Rose used a more personal and private approach when calling out gendered social interactions and behaviours. She made time to talk with her colleague and did not call out the behaviours as abruptly. However, the conversation was still direct as she made it clear that she would not accept sexist behaviour, demanded respect and was stern about her point:

The person that was doing it, he was one of many, but he was the guy I was dealing with. After three weeks in the job, I took him out for a drink. I said, look, you can't keep treating me like this, it's not going to work, you won't get the best out of me and you won't get what you need to deliver for your organisation. I said, look, you've got to respect women...Why can't you respect me? And if you want to do your nut, let's do it quietly in a room, but all you need to do is tell me what you're thinking, what you think the problem is and I will sort it for you, and he did. He backed down.

This personal and private approach was also used by Michelle when consulting with a male colleague who was hesitant to share the workload. This approach resulted in developing a strong relationship with her male colleague:

Initially, it was a bit of an odd situation for me, because my role was created to take over responsibilities from another person from another department within [organisation's name]. So that person felt quite insecure and they weren't, they weren't open to do any hand over to me... But it's settled through eventually and it needed a bit of persistence with this guy to tell him that I'm not here to take away everything that he's, that he's currently doing. But it's kind of a delineation between responsibilities... And we built a really good relationship, even now.

Using a problem-solving or personal approach to call out doing gender social interactions, stereotypes and assumptions were often used among participants. However, Sarah shows that this approach has not always been successful:

Interestingly I'll try and be courageous and I'll say hey, when you did this it made me feel a little bit s***, so can you think about a

different way of perhaps communicating that. That doesn't always
work. They can be, well you need to get used to it, or what have you.

Although the problem-solving approach was not always successful for Sarah due to the reactions of her colleagues, other participants used it to call out negative behaviours, explain why the behaviour is not acceptable and develop solutions with male colleagues to solve the behaviour going forward. Calling out this behaviour enabled participants to set the tone within the ICT industry of what behaviours they would and would not accept. This helped break gendered social interactions which were reinforced by the industry's culture. Participants also acknowledged that calling out social interactions become easier throughout their career as they felt more confident in senior roles. They developed this confidence through experience and not constantly worrying what others thought of them. This approach also helped participants develop supportive relationships with male colleagues which in return changed their work environment.

Although direct and problem-solving approaches were useful, when participants felt that doing gender social interactions, stereotypes and assumptions were too serious for them to address they used formal practices such as Human Resources (HR) to address the behaviour. For example, Jess explained that she was once spoken negatively about by a male colleague in a meeting where she was not present. This led to her formally raising a complaint through HR. She emphasised it was essential for her to go to HR because if she did not address this behaviour she would continue to be undermined. Fortunately, HR handled the situation on her behalf and this created a strong relationship with her male colleague:

> *Absolutely talk to HR. There's no way I was going to have that..*
> *there was no way I was going to be called out because it was going*
> *to undermine me if I didn't take some action. And to the point that*
> *there were some conversations had and that the person came and*
> *apologized and said that they upset me? And I said you absolutely*
> *you did you were out of line. Since then we have a really good*
> *relationship. I think you have to call it out. You cannot sit back and*
> *let it be railroaded over you.*

Similarly, Rose experienced being undermined by a male manager due to his gendered assumptions of pregnancy. HR was used to formally address this behaviour:

> *In fact, I'd just miscarried, and we had it down as three days and I was at home for three days and worked... I've had a manager come to me saying, I heard you were pregnant so we're going to reduce the accounts that you look after. I said, I think we're going to go and have a talk to HR.*

In stark comparison to formally addressing behaviours and stereotypes, participants said that they also called out behaviours indirectly and through humour. Calling out behaviour through humour was not used by participants to be more likeable, rather they believed that not all comments needed to be called out as directly. This approach allowed participants to confront negative behaviours acceptably given the context.

Daisy explained that she uses non-verbal cues such as eye contact to make others understand their doing gender behaviour:

> *I try and not to be too confrontational but I do try and bring it back and I literally... like if somebody turns around and calls me his wife (in a conference), I go actually I'm dah, dah, dah, and I kind of just give them a bit of a look as if to say really? We're doing this are we? That's all they need and then they realise that they've been a bit of a d*** (laughs).*

Rose articulated that she used her humour as a defensive mechanism when male engineers ask her to complete tasks based on her gender. She used humour to deflect sexist comments from older colleagues:

> *I think in this environment, it's certainly very male dominated and the older engineers are very, very sexist. They have no intention to be mean or cruel, to put you down, but I would be asked once a week to do some print outs or take some notes and I just don't do it. I go, oh my goodness. I said, I can't get that printer to work for me. I laugh it off. I use a little bit of humour.*

Therefore, participants spoke about how on an individual basis, their calling out of male colleagues was challenging gendered stereotypes, assumptions and social interactions and resulted in improved or changed behaviours. Over time, this could lead to culture changes within the industry. Participants used different methods to call out doing gender behaviours including through direct confrontation, a problem-solving approach, formally with HR and indirectly through humour. Participants highlighted that when male colleagues were confronted by a problem-solving approach or HR this created positive relationships with participants. This is due to

male colleagues not feeling threatened and having a chance to apologise and change their behaviour in comparison to when they are directly called out.

4.4 Women shaping the industry

Through their representation within the ICT, industry participants worked to shape and develop the industry by using their minority as an advantage, increasing female visibility within the ICT industry and supporting other women. As the ICT industry is male dominated, participants used their gender minority as an advantage. They achieved this by leveraging their visibility as a minority within the industry and utilising their soft skill sets. Alex found that being one of the very few women in the industry enabled her to be more visible, and more readily remembered. She used that to her advantage to secure business deals when working in ICT sales:

> *You stand out. People used to focus on the negative, oh, it's a male dominated... I was like, oh my god. When I was in sales I'm like, I'm...a female with the boy's name. You going to tell me I didn't stand out? In a room – back then because everyone wore suits – in a room full of middle aged male pale stale 45 year olds, you have blokes who all look the same, now, that's not going to get you the deal, but when you have to stand out, so somebody remembers you, it had its advantage.*

Similar experiences were recounted by other participants who found that the lack of women in the industry allowed them to stand out and be heard in different situations. Megan articulated that it was essential for her to use her gender as an advantage despite it not being easy: *"It's really good to use you being part of the minority as an advantage to just speak up, but you have to learn and you have to practice it. It wasn't easy, I can tell you".*

Similarly to Megan, Sarah explained that because she stood out as a woman, that meant her perspectives or voice was also more noticed:

> *For me it was a novelty in my career to be the only chick in some of these teams, so I was that token women that could be heard because I had a squeaky voice, with a whole lot of guys in a room so I could actually make a difference.*

However, when she was not the only woman in the industry it was harder to use being a minority to her advantage. She found that although an increase in the number of women could indicate a clear culture shift in an organisation or the

industry, when there were only a few women, their gender could not be used as an advantage:

> *If you're the only woman you can actually stand out a bit, you can actually make a bit more of a difference because you're the only woman and your voice is a bit squeakier and all sorts of stuff, so you kind of make a difference. Then when you get two women in the room it's kind of this weird balancing act and then when you have a critical mass you're fine. So then you're not a woman anymore, you're just part of the team.*

Alex, Megan and Sarah's experiences identified one way in which participants were able to use their minority as an advantage to be seen within the ICT industry. Another way that participants found they stood out was their 'soft skills'. This skill set was often in contrast to the stereotypical technical, less collaborative skills expected of men in the industry. This included storytelling, collaboration and communication. For example, Georgia highlighted: *"What I do is I look to see how being a woman can help me. And I think one of the main things that it gives me is that I am a bit more empathetic and articulate and all those sorts of things".*

Lucy also explained how she used her gender and communication skills to develop business with stakeholders:

> *To this day, I'm fascinated by technology and all the things you can do with it, but I'm also fascinated by how it can help people and I think the fact that you know all of the stereotypes that relate to my profession are. Well, I don't fit any of those stereotypes in that I'm quite articulate, I like people, I enjoy explaining things to people and I'm female. I think that actually was a big advantage.*

Similarly, Rose highlighted that her relationship building and communication skills allowed her to story tell and articulate her good work and focus on the positives:

> *Yes and I think a bit of courage too and I think in terms of it was completely male dominated, I put that to one side and my strategy was to do good work and to be able to tell the story about it and use that as the vehicle rather than going, oh, they're pushing me down; rather than the negative. Looking for positive.*

While Lucy used her difference to develop business, and Rose used her skill set to promote positive stories of her performance, Alex found that her soft skills were advantageous in her leadership role:

And you can also use your skills to your advantage. If you were to stereotype – and I hate stereotyping – if you stereotype that women are of a more nurturing nature, then I think that's a better leadership skill across the board, so you could actually get more loyalty from your staff because you are looking after them better.

Through their difference, while working within a male-dominated industry, participants were able to use their minority as an advantage. This enabled them to stand out in the industry, be heard and develop through the use of their soft skill set. Participants reinforced that to be successful in this industry they had to discover ways in which their gender could play to their advantage.

Senior female leaders in the ICT industry did not only use their minority as their advantage but their representation also increased the visibility of women in the industry. This in return challenged the gender norms of the industry. Lucy explained that her visibility within the ICT industry helped other women aspire to achieve what she has:

Just living it, I would say. Just being part of the industry for so long. I'm told...I'm told that I'm very well known within the IT industry. I don't know whether that's true or not, but people say, you're one of the rock stars. But I think that the fact that I am reasonably visible means that people can go, well, I can aspire.

She also highlighted that there have been changes in the ICT industry including the increase in visibility of female leaders. She reinforced that the increase in the number of women leaders creates more role models other women can aspire to:

I think as women, particularly in my generation, women have become more visible leaders, I think that's been really positive. When I started, the boss was always a middle-aged bloke, generally with grey hair... But I think the fact there's more people that look like me around is probably... you know, and I've got staff now who will go well um, okay, yeah, they can aspire to it sort of thing.

Similarly, Rose also highlighted that she has seen increased visibility of female leaders from her generation within the industry:

One of the project managers that's worked for me about two or three times, when she started work – she's probably a little bit older than I am – when she started work at (organisational name) she applied for a role in the IT team and they said, I'm sorry, we don't have women in our IT team. So if you think of that as the starting

> *point, I think we're seeing a lot more female CIO leaders probably only in the last two to three years.*

The increased visibility of senior female leaders within New Zealand's ICT industry challenged gendered norms within the industry. Such as the ideal male worker, technical expert, lack of communication skills and assertive nature. Additionally, senior female leaders supported other women through mentorship and creating support groups.

Participants indicated that supporting young women in the ICT industry through formal mentorship was essential for the development and confidence of young women. Rose gave an example of when she helped develop a young woman's career through mentorship:

> *I'm mentoring a young engineer at the moment... She's just being pushed aside. All I do for her is I go, the global COO is really neat... I emailed him and I said, look, I've got this woman with all this talent. She's working in the area we want to grow. Who can I connect her with around the globe? He comes back with three names, we do a little Skype, we catch up and they put her on projects that are global and all of a sudden, she's not a wilting flower in the corner; she's actually standing up and doing what I know she can do really well.*

Similarly, Georgia reinforced that she supports the career development of young women through mentoring, building awareness of opportunities and taking the time to have in-depth conversations about their potential progression:

> *I've been involved in various women and leadership programmes, and supporting the women staff in the department and making sure that they are aware of programs that they can go on to develop them. And also, you know, I think a lot of the time just by being there. I had a discussion with one of my staff yesterday, about her career, and that you know it is important for her to have a career and what she needs to do if she wants to get to a certain point. Whereas, you know a guy probably wouldn't have that conversation.*

Charli also reinforced the importance of mentoring for support and development for young women. When asked what she would change about the ICT industry, she indicated taking advantage of formal mentoring programmes:

> *I would like to encourage all organisations to think seriously about a mentoring programme. Mentoring programmes don't have to be hard. You can do something called ten-minute mentoring or you can*

> *do mentoring walks, or you can do mentoring circles that don't take*
> *up a lot of people's time. The value in mentoring is that you get to*
> *see and talk to someone else who has perhaps been through what*
> *you have been through, and they can suggest ways of coping with*
> *whatever you're going through, or they can suggest ways for you to*
> *flourish in the organisation.*

In comparison to formal mentorship, Jess reflects on a situation where she supported a young woman who was struggling with male colleagues. The young woman felt hammered as males would unnecessarily question her capabilities:

> *As soon as she goes with all these boys, she goes "I just don't know*
> *they make me so nervous" and I go but why do they make you*
> *nervous? Because you're good you've got a good brain, you can use*
> *it! But she says "I just always feel stupid with them"… Because she*
> *just comes back sometimes feeling hammered. But I always pick her*
> *back up and send her back out there again.*

This support was essential as it reinforced the young woman's confidence and encouraged her to stay within the industry. The importance of support is reiterated by Georgia who explained that having other women who champion you is essential for success in the ICT industry:

> *There's this girl who's just started in a company, and she's doing*
> *really well. But she's part of why she's doing well is that people are*
> *around who's supporting her and putting her forward and, and*
> *trusting in her. Whereas if you don't have that, that's much harder.*

Megan also highlighted that as a senior female leader in the industry, she still uses her mentors and support networks for guidance:

> *Having the right people in my life as some supportive people and*
> *mentors. I still do have a few mentors that whenever I need to talk*
> *to someone or get guidance, I go to them and they're really helpful.*

Mentorship by participants supported young women in the ICT industry with career development and encouragement. However, senior female leaders also developed networks and programmes to support other women in the ICT industry.

Participants identified that support programmes and career development networks were created to advocate, make a change and provide collective support for women in the ICT industry. Sarah created a return to work community which equipped

leaders on how to thoughtfully support employees returning from maternity or caregiver leave:

> *I try to put that into diversity inclusion for women, so I created a return to work community people leaders group, so people leaders that were dealing with people that were going to go on maternity leave or caregiver leave, giving those people managers some tools on how to make that person still feel included with their job while they were away. It's something I'm really passionate about.*

She gave an example of how she used these tools to keep connected and support one of her direct reports while she was away and on return from maternity leave:

> *She went to leave and gave me her laptop. I said no, keep your laptop, which was great so it was always kept updated and she could read if she wanted to, but there was no pressure to. The person that I got to act in her role had to write a monthly report to her to say this is what I've done in your role, these are the tasks that I've finished. Not to me, but to her... When Michelle came back to work her laptop was all up to date, she didn't have anything, we actually replaced her laptop, I think we upgraded it while she was away, she also got a pay increase while she was on leave. So I gave her a performance review...so really kept her connected. That's how you make women stay in your organisation. (Sarah)*

Sarah created this support group based on her own experience, and her passion to increase women in the ICT industry. The creation of this group and the tools used went above the legislative and organisational policies and practices. It facilitated leaders to create and provide greater support and connection for parents on maternity or caregiver leave. Similarly, Charli and other female leaders developed an International Women in Leadership support group for women in their organisation:

> *I was a founding member of the Women in Leadership forum at (organisations name) where there was 12 of us. Setting up that network was really powerful for us. We could see that there was a need; in fact, within 18 months the group had spread through to Australia and Kuala Lumpur and all over the place.*

She also highlighted that this group was created before the buzz of diversity and inclusion initiatives:

> *That community was developed and the women in leadership forum was created and it was the first cab off the rank for the diversity and inclusion programme at (organisations name). Actually, it was*

> *flourishing when diversity and inclusion were still on a piece of*
> *paper. (Charli)*

It appeared important to Charli that she had been amongst the first to pioneer diversity and inclusion initiatives within the industry. Similarly to Charli, Alex was also involved in a Women In Technology support group, she indicated it not only helped others but gave her a sense of enjoyment and greater connections:

> *I'd say one of the things that I did enjoy was back when I was at*
> *(organisations name) there was a group at the time called Women*
> *in Technology that I was actively supportive of. ...We would do*
> *events, like Women In Technology events. Some would be serious,*
> *some would be fun. There was talk about mentoring programmes. I*
> *think that was really cool to have had that involvement in this.*

Megan explained that the network she was involved with aimed to break stereotypical perspectives of the ICT industry. This would allow women to make informed decisions:

> *This is what I'm trying to achieve with (organisations name) to give*
> *every student opportunity to make informed decisions...I try to*
> *provide an environment for them to try tech, to see if they can use*
> *their creativity, problem-solving skills, and being passionate and*
> *caring about people, problem-solving, interaction, using technology.*

Therefore, participants have broken gendered stereotypes, assumptions and the ideal male worker norm through their representation within the industry. Through this representation, they have used their minority as an advantage to stand up amongst others and have developed stakeholder relationships and leadership through the use of their soft skill set. Their representation has also increased visibility of women in the industry which has provided aspiration for other women. Their representation in the industry has enabled them to support young women through formal mentorship and the creation of support networks and groups.

4.5 Influences for undoing gender

As highlighted in sections 4.2.2 and 4.2.3, participants have tried to undo gendered social interactions, assumptions and stereotypes through calling out this behaviour and their representation within the industry. However, there have been influences which have motivated and allowed them to do so. This includes their own personal values, other leaders and the organisational culture.

Through their personal values, participants felt that changing the industry to be supportive of women is the right thing to do. Sarah explained that her influence has been informed by her interest in social justice. Her interests lead her to research diversity and inclusion within her MBA as well as being a diversity and inclusion champion in the industry. Similarly, Julia highlighted that it is their responsibility to action and make a change in the industry for others:

> *There is still a bit of that attitude that sits around and it just becomes our role to call it out when you see it, to create those social policies, to make sure people adhere to the social policies and make sure the team feel empowered to do the same thing, really.*

Charli explained that her influence was to create the change she wanted to see: "*We have to create some sort of core change from within [organisations name], because we can't expect our management and our leadership to do it for us.*" In comparison to Julia and Charli, Kate described that her personal influence is through wanting to break the cycle for other women. She highlighted that just because she has had a hard journey, does not mean it needs to be hard for other women:

> *I don't wanna be the 80s shoulder pad brigade, you know when the women went oh well I've had this hard. You know they made it hard for other women. That's not how it should be. But it's also not just about women either right, it's just about doing the right thing by anyone irrespective of their gender, or ethnicity, or mental health issues, any of that stuff. It's just about doing the right thing.*

Kate also highlighted that her influence stems from the changes she wants to see for her daughter: "*And I have a responsibility as a woman to call this stuff out, so that my daughter doesn't have to experience the things that I've experienced".*

Although the participants' personal values are unique to each of them due to their experiences and social justice investments, these values motivated participants to make a change within the ICT industry and undo gendered stereotypes, assumptions and social interactions. Along with personal values, participants recounted the importance of having supportive leaders. These leaders have influenced, supported and encouraged participants to develop within the industry, see their worth and feel included.

Kate gave an example of a male leader who reinforced her worth and encouraged her to take new opportunities within the industry:

> *But what Dan did, was he made me, or helped me to understand my*
> *worth. So like many women, you know I was. I had struggled with*
> *the I'm not good enough, I'm not a good enough wife, I'm not good*
> *enough at work, ooh I'm not smart enough to do that role, ooh I*
> *don't tick all the boxes I better not apply.*

Similarly, Rose highlighted that supportive managers were influential to the navigation of her career:

> *That was really I think... and I think when you've had some stunning*
> *managers and I've had some really crap ones, but I've had three that*
> *are totally outstanding and the one I've got now is one of those*
> *three, they actually help navigate which is fantastic*

In comparison to Kate and Rose, Charli explained that the supportive leadership team within her organisation influenced her to bring her whole self to work. This allowed her to re-evaluate who she had changed into due to the culture of the industry:

> *Towards the end of that, I had an exceptionally good leader and he*
> *helped me realise... well, actually, his leader as well, so our General*
> *Manager(GM) and my leader helped encourage people to just be*
> *themselves. So it wasn't just me; that was a clear message from both*
> *of them across all of our team. I think in that atmosphere I just*
> *came to realise that I needed to be what I was really comfortable*
> *with, not trying to be something else.*

The support from other leaders within the ICT industry influenced the development, worth and inclusion of participants. The creation of these cultures helped undo gendered norms and constructs within the industry. The development of these cultures was achieved through the action of participants, the social shift in the industry and the introduction of diversity and inclusion initiatives.

Participants described that the ICT industry is aware that it needs to develop cultures of collaboration and inclusion. Kate has seen increased inclusivity and the development of a collaborative culture within her organisation: *"We've certainly got a lot better and certainly more about doing the right thing and actually caring about each other. Like a genuine level of care and concern."*

Georgia highlighted that stereotypical perspectives and organisational cultures in the ICT industry have changed. The driver of this change is due to the shift of the

nature of the work within the industry. She explained that the new environment is much nicer for women in the industry:

> *There's the flexibility, but just, it's more social, you know, so in the old days, you used to think of a programmer as the person that they put in the corner with coke in the dark and they used to just sit there and code and not talk to people. Whereas the culture in industry now is much more kind of having your stand ups in the morning, and, you know, sharing and having to understand the business as well... So that whole environment is a much nicer environment for women*

In an addition to a collaborative culture, participants highlighted that they worked to create a safe 'no blame' culture when it came to making task mistakes within the industry. This is due to the turbulent nature of the ICT industry and also links to a culture of collaboration. Rose highlighted that creating a safe culture allows the business to deal with mistakes effectively and easily:

> *I have a no blame culture in the team because things go wrong in IT all the time and if they come to us, any of the leadership team or myself, with I think I've stuffed up, we'll help make them part of the solution because we'll all work it out...I think that philosophy, the team philosophy too of the relay race, we're all as important as each other, and if we drop the baton there, we all fail, I think those sorts of things have really helped get over those sort of challenges.*

Sarah highlighted that it was her mission and legacy to create a culture of safety:

> *The one that I instil here is a culture of safety, so it's safe to fail, it's safe to put your hand up and say mea culpa. That's my legacy if I leave here is that we created a safe environment for you to be honest and then with that honesty and transparency we're able to make really informed decisions.*

Participants also identified that the creation of these cultures was due to the increased awareness of diversity and inclusion and through diversity and inclusion initiatives and networks discussed earlier. Alex explained that societal changes have influenced organisations regarding diversity and inclusion:

> *I think, again, you still have the dinosaurs that are around, but I think generally, again, society has changed. So much more inclusive, much more aware of people, much more aware of staff engagement and the importance of diversity. I do think that that has come up in the last 10 years.*

Similarly, Rose highlighted the significant role their diversity and inclusion programme played in the creation of a safe culture:

> *There's that, but there's also the D&I programme that we've rolled out that's made it acceptable. Like the values, we can call people out on the values in a non-threatening and aggressive way. We use the same thing for our D&I conversations so it gives them the platform.*

Charli highlighted that diversity and inclusion initiatives allows all employees to bring their whole selves to work. She explained that their organisation has moved away from the discussions around diversity and inclusion and that it is part of their culture's norm:

> *I needed to move into an organisation that it doesn't matter who you are; just bring your whole self to work, kind of stuff…This is a lot more inclusive an organisation to the point where they don't really talk about diversity and inclusion.*

Therefore, participants had clear influences which aided them in undoing gender within the ICT industry. These influences included their own personal values, the support they received from other leaders within the industry, and the importance of creating no blame and collaborative organisational cultures.

4.6 Chapter summary

In conclusion, this chapter presented four themes with nine sub-themes. These themes were derived by data collected within twelve semi-structured interviews with senior female leaders in the ICT industry. Firstly, doing gender behaviours, challenges and barriers experienced by participants were identified. This included social interaction from male colleagues, which maintained gender in the industry. Next, the negative behaviours from other females in the industry were explored. This identified that their behaviours created additional barriers for participants. Including, disempowerment, lack of support, undermining behaviour and bullying. This was followed by how gender is maintained within the industry due to the lack of females in technical roles.

Once these doing gender barriers were identified, how these barriers were undone by participants were explored. It was found that participants called out social interactions, gendered assumptions and stereotypes which construct and maintain

gender within the ICT industry. This was done in various ways including, directly, through a problem-solving approach, formally, and through humour.

This was followed by how the increased representation of senior female leaders within the industry was undoing gender. It was found that participants used their minority as an advantage to stand out in the industry. They also used their soft skills in business development and stakeholder development opportunities. The increased visibility of women in the ICT industry which provided aspiration for other women. Additionally, through their participation within the industry senior female leaders could support other women in the industry through formal mentorship and the creation of support networks and groups.

The final theme identified the influences which aided participants in undoing gender within the ICT industry. It found participants personal values, the support from other leaders and the creation of a no blame and collaborative organisational culture influenced their efforts. The next chapter will review these four themes to theories identified in the literature review which will draw meaningful interpretations of the participants' experiences.

Chapter Five: Discussion

5.1 Introduction

The previous chapter presented the findings of the data collected for this thesis. It identified four main themes, doing gender, calling it out, women shaping the industry and influences for undoing gender. The findings identified that doing gender was constructed and maintained within the industry by social interactions, the negative behaviour of other female leaders and the lack of women in technical roles. These doing gender social interactions were undone by participants who called out and called in negative social interactions, behaviours and stereotypes. Additionally, to this, participants undid gender through their visibility within the industry and through influence and support from their leaders. This chapter interprets and reviews these findings against the theoretical literature highlighted in Chapter Two. This chapter aims to identify how this thesis reaffirms previous research and how it adds new understandings and considerations to undoing gender knowledge.

5.2 Doing gender

Social interactions are a prominent way in which gender is constructed and maintained within the ICT industry (Deutsch, 2007; Kenny & Donnelly, 2019; Kirton & Robertson, 2018; Smith, 2013). It is important to use a social constructionist lens to focus on the real-life experiences of women within the industry. This can be achieved by analysing the gendered interactions between men and women (Griffiths & Moore, 2010; Kenny & Donnelly, 2019; Trauth, 2002). This section discusses how social interactions, the negative behaviours of female colleagues and the lack of women in technical roles constructs and maintains gender within the ICT industry.

Previous gender literature on the ICT industry has typically focused on identifying barriers to women entering and succeeding within the ICT industry. These barriers include negative social interactions such as overt discrimination (Cater-Steel & Cater, 2010; Griffiths & Moore, 2010; Kirton & Robertson, 2018). In contrast to this, participants from this study identified that overt discrimination such as sexist comments, the old boys club and slanderous comments are still present but have become less common within the industry. Participants explained that this behaviour was more prominent earlier in their careers. As argued in doing gender research

gendered institutions can change and the social interactions which support gender inequality can also be undone (Deutsch, 2007; Wright, 2016). This was consistent with the findings of this thesis which identified that overt discrimination is no longer as prominent within the ICT industry, due to the positive organisational culture shifts that discourage overt discrimination and the increased emphasis put onto diversity and inclusion. Despite the positive shift away from overt discrimination, participants noted two types of social interactions displayed by male colleagues which continue to construct and maintain gender. The first includes males not knowing how to interact with women in their teams; the second is resistance to females within the industry. This has led to male colleagues displaying sexist behaviours and biases. Examples of this include stereotyping and double-bind bias.

Stereotyping and double-bind bias were amongst the negative direct social interactions which created and maintained gender within the ICT industry. These social interactions were discriminatory and undermined women's worth, for example trying to railroad female leaders in important meetings and project negative stereotypes onto them. Examples of this include interrupting participants in meetings and arguing with their ideas for the 'sake of it' this led to their skills and capabilities being questioned (Kirton & Robertson, 2018). Due to these negative social interactions encountered participants felt that they needed to continually prove their worth and abilities. This has been commonly reinforced within research on women working in male-dominated industries (Cater-Steel & Cater, 2010; A. Powell et al., 2009; Smith, 2013)

Stereotyping and resistance to females within the industry leads to leadership bias behaviour where masculine traits in leadership are preferred over the feminine, this is common in doing gender research within male-dominated industries (Kirton & Robertson, 2018; McGee, 2018). It is interesting to note that negative social interactions displayed by men within the ICT industry were more commonly displayed by other male leaders, colleagues and stakeholders rather than the participants' direct reports. This could suggest that participants' direct reports, who were younger, have not developed these gendered biases as they have not been in the industry as long. The lack of negative social interactions from the participants' direct reports may also be due to the respect they hold for their senior female

leaders as the data did not identify if these subordinates showed the same level of respect to other women within the industry.

Female leaders

Participants explained that it is not only the negative gendered interactions from males which maintained and constructed gender within the ICT industry but also the negative behaviours of other women. Additionally, this reinforced gender inequalities within the industry. These negative behaviours portrayed by other female leaders were argued to be much worse and detrimental to the development and progression of participants than the negative behaviours displayed by men. In comparison to the negative social interactions displayed by male colleagues, the behaviour of other female leaders included undermining and undercutting other women, not supporting one another, bullying and everyday micro-aggressions.

These negative traits are common within females that display the Queen Bee syndrome. The Queen Bee syndrome can be described as a female leader who undermines, bullies and demoralises other women (Derks et al., 2011; Harvey, 2018). This behaviour can be direct but can also manifest indirectly through social aggressions. For example, through social isolation, exclusion and gossiping about other females (Derks et al., 2011; Harvey, 2018). Participants acknowledged that this behaviour from other women stemmed from their personality traits, rather than becoming the Queen Bee or making themselves more masculine or assertive to match the nature of the industry, which has typically been discussed in literature (Derks et al., 2011; Harvey, 2018). Other participants highlighted that this behaviour was due to the competitiveness of women and the lack of support in the ICT industry which lead to these women feeling threatened or insecure. This could be reflective of the industry in which they have developed in, a highly competitive male-dominated environment. It is important to note, that participants within the ICT industry have little contact with other females within the industry. However, the perceptions they hold of other women are at two extremes. For example, they believe that other women are their means of support or they have felt threatened and experienced negative behaviours from other women within the industry (Wright, 2016). Although the Queen Bee behaviours are not as different from what men displayed, when participants experienced negative behaviour from other

females they felt further betrayed. This could suggest that women within this industry have a greater expectation that they will support one another.

In comparison to direct put downs, lack of support and bullying, participants also experienced everyday micro-aggression from other female leaders within the ICT industry. These everyday intra-gender micro-aggressions have been argued to have an incredibly harmful impact on women (Mavin et al., 2014). Intra-gender micro-aggressions include belittling messages which are subtle in comparison to put downs, lack of support and bullying. As micro-aggressions are subtle, it can occur within everyday conversations which initially may be ignored or seen as innocent. Thus, micro-aggressions can have negative individual impacts for women but it can also continue the marginalisation of women within male-dominated industries (Mavin et al., 2014). The subtle nature of micro-aggressions is reflective of another way in which 'doing gender' is maintained within social interactions in male-dominated industries. Previous research typically discusses direct and overt discriminatory social interactions practices (Deutsch, 2007; Kenny & Donnelly, 2019; Kirton & Robertson, 2018; Smith, 2013). However, it fails to recognise that re-occurring negative and subtle underlying behaviours are also a large contributor to gender maintenance and discriminatory practices. Thus, when focusing on how social interactions construct and maintain gender within the ICT industry research and policy needs to shift beyond males and direct and overt discrimination as the indirect practices are harder to recognise and change but are clearly as detrimental as the others.

Negative social interactions and behaviours are not the only way in which gender is constructed and maintained within the ICT industry. The lack of women within technical roles in the ICT industry has been identified by participants as an underlying issue which leads to the disempowerment of women (Kenny & Donnelly, 2019). There is vast research on how females that work in male-dominated industries are breaking gender norms of work, by working in fields that are not categorised to their gender (Heilman, 2012; Morash & Haarr, 2012; Wright, 2016). Despite challenging these gender norms participants linking their soft skill roles and non-technical positions within this male-dominated industry leads to task gendered segregation. Roles in which participants are highly represented in are not valued as

highly. Holistically, this contributes to the gender pay gap within the industry and reinforces gendered processes (Courtney et al., 2009).

It is interesting to note that task gendered segregation within the ICT industry is not always purposeful. Participants identified that the main reason for this segregation is due to women coming into the ICT industry unexpectedly and through non-traditional pathways. This can be due to the ICT industry being new and developing when participants were starting their careers. Within this study, only four out of the twelve participants went through the traditional pathway of gaining a formal ICT university qualification after high school. The remaining female leaders entered the industry by chance, which leads them to not hold technical qualifications. Participants were pushed into soft roles once in the industry for two reasons firstly, technical roles such as programming require tertiary qualification. Secondly, roles such as Business Analysts and Project Managers require good communication, stakeholder management and organisational skills which participants explained were their strengths.

It can be argued that as participants do not hold technical skills and are utilising their soft skills they are doing gender by conforming to their gendered norms. However, participants thought that entering the ICT industry with technical skills would have been extremely difficult due to the gender bias present (Kenny & Donnelly, 2019; Peterson, 2010). Despite this, participants noted that although they were able to develop within the industry through their soft skills, it is essential that in the future there is a good representation of females in technical roles as this will aid in decreasing the biases and task gendered segregation (Kenny & Donnelly, 2019; Peterson, 2010). However, this has been argued within the literature as a double-bind issue for women entering technical roles (Kenny & Donnelly, 2019; Peterson, 2010). As they enter technical roles they are asked to conform to masculine work ideals, for example technical roles in the ICT industry require not only technical self-confidence, but also being competitive and ambitious (Peterson, 2010). It has been argued that females struggle to assert their technical self-confidence which leads to additional barriers for their development in technical roles.

5.3 Calling it out

The previous section reviewed how gender is constructed and maintained within the ICT industry. As proposed by Deutsch's (2007) research, investigating doing gender through social interactions should shift to focus on creating change rather than solely on the presence of inequalities. In line with this, the focus on this section is on how senior female leaders within the ICT industry undo gendered social interactions. This is shown by calling out gendered assumptions and stereotypes which construct and maintain gender within the industry.

Within this study, participants explicitly used the term "calling out" when discussing how they challenged doing gender social interactions, assumptions and stereotypes. Although participants did not categorise how they called out this behaviour, the findings indicated it was done directly, formally, through a problem-solving approach and through humour. 'Call out culture' is not typically referred to in undoing gender literature, but it is found in social justice advocacy and macroaggression counselling studies (DiAngelo & Sensoy, 2014; Thurber & DiAngelo, 2018). 'Call out culture' refers to negative behaviours being verbally confronted and challenged publicly. Thurber and DiAngelo (2018) argue that calling out behaviour can be problematic as it focuses more on shaming the individual's behaviour rather than allowing the individual to recognise their wrongs. In contrast, 'call in' culture is emerging as the new way to sensitively respond to social interactions and macroaggressions. The purpose of using 'calling in' is to help others recognise and re-evaluate their behaviours in a non-confrontational environment (DiAngelo & Sensoy, 2014; Thurber & DiAngelo, 2018). This helps mitigate defensive reactions which are typically displayed when individuals are called out in public environments.

On par with 'call out' and 'call in' culture literature, participants identified that they employed calling out to directly address their colleagues' undermining behaviour. Whereas, call in culture was more commonly used to express how participants felt and to address behaviour and develop a solution through collaboration (DiAngelo & Sensoy, 2014; Thurber & DiAngelo, 2018). Participants also reinforced that they publicly called out social interactions when they felt their skills and abilities were being undermined. Participants indicated that directly calling out this undermining

behaviour allowed them to publicly assert their dominance. Asserting dominance is not discussed in call out culture, but when used within an organisational and individual context, it allowed participants to develop an image of not letting other colleagues push them around. The importance of creating this image for participants may be reflective of their constant battle with gendered macroaggressions and having to prove their worth within a male-dominated industry (Smith, 2013). Therefore, directly calling out gendered social interactions allowed participants to build their image and set the tone for behaviours deemed unacceptable within this male-dominated industry. Although participants used direct confrontation to call out social interactions, it is important to note that participants are senior female leaders within the industry. Thus, they may have greater confidence in engaging in direct confrontation publicly than junior women in the industry.

Participants found that by calling in or using a problem-solving approach to discuss negative behaviours, allowed them to explain how they were feeling and address the negative impacts of their colleagues' behaviours (DiAngelo & Sensoy, 2014; Thurber & DiAngelo, 2018). Many of the participants were more likely to use a calling in approach than calling out to address and undo gendered stereotypes, assumptions and behaviours. Although it was not specifically stated, participants chose to use call in culture and collaboration as they believed it allowed colleagues a chance to understand their wrongdoings and work together towards a solution. They stated that this was the right approach as it helped create and form positive relationships with male colleagues. It could be argued, however, that calling in behaviour is also seen as a feminine way of addressing negative behaviour. This is because calling in centres on building relationships and compromise, often perceived as feminine, soft skills in comparison to calling out behaviour which is direct and abrupt.

Although calling in behaviour by a problem-solving approach was the most popular approach for addressing gendered behaviour and was widely used by participants, this was suited to those who believed they could not always directly call out behaviour. They believed they had to pick their battles, which is reflective of them working in a male-dominated industry and not wanting to be stereotyped as the 'feminist ball breaker' (Grosser & McCarthy, 2019). It is assumed that if participants called out all the negative behaviours in relation to their gender, they would be stereotyped into one category. This would influence how others perceived them and

their expertise. This could suggest that the organisational cultures of male-dominated industries indirectly silence women and make their opinions seen as a burden or irrelevant (Kirton & Robertson, 2018; McGee, 2018; Nentwich & Kelan, 2014). In addition, the fear women held of being stereotyped reinforces that they indirectly do not feel equal to their male colleagues. Furthermore, this could lead to women continuously being cautious and fearful that their hard work and place within the industry could be questioned by the perceptions male colleagues hold of them.

Being cautious links to how participants used humour to call in behaviour. The use of humour to call in behaviour was reflective of participants' not wanting to be confrontational and calling out behaviour indirectly. The lack of confrontation can be interpreted as participants' not wanting to be stereotyped as the 'feminist ball breaker'. However, participants expressed humour was used when calling in negative behaviour that they perceived was not direct and overt. Throughout this study, it is important to note that participants did not mention if other males also called out their colleagues' negative behaviour. This links back to previous literature which highlights the importance that men within male-dominated industries need to continuously be allies for women to create change or women will continue to fight an uphill battle (DuBow & Ashcraft, 2016). As stated earlier, negative social interactions were not just limited to male colleagues but were also displayed by other female leaders. However, participants did not directly express if they called out other female leader's behaviours. This could suggest that women felt empowered to call out negative male behaviour due to the shift in culture within industries. However, if they called out other female's micro-aggressions it could possibly be perceived as breaking solidarity with the few women in the industry.

In comparison to calling out and calling in behaviour towards their colleagues, participants also used formal processes such as filing complaints with human resources to address the negative gendered social interactions and behaviours. This suggests that formally involving human resources was used to send a strong message to others that negative behaviours would not be tolerated within this industry. Participants indicated that if the negative behaviours such as railroading in meetings were not formally addressed, then this would lead to reoccurring standing issues that needed to be taken to human resources. Thus, in comparison to

calling in and out behaviours, if participants' felt that if negative behaviours were going to be repeated by male colleagues they addressed this behaviour formally.

5.4 Women shaping the industry

As Deutsch (2007) suggests, it is important to focus on the change created within gendered organisations. This section analyses how women's actions in the industry undo gender, this includes participants using their minority as an advantage to challenge gender norms, create new role models and develop formal support networks and mentoring programmes for other women in the industry.

Participants highlighted that they embraced and used their gender minority as an advantage in two ways; by utilising their soft skills and standing out positively as the women who had made it within the ICT industry. Existing literature which focuses on leadership styles and female leaders working within male-dominated industries has identified that female leaders must obtain and display a range of complex competencies to be successful within male-dominated industries (Esser, Kahrens, Mouzughi, & Eomois, 2018). The competencies that female leaders are required to display to be successful leaders within male-dominated industries are typically shaped by social gender role biases (Esser et al., 2018; Gartzia & Engen, 2012). These competencies can include collaboration, emotional sensitivity, support and a participatory leadership style (Esser et al., 2018; Glass & Cook, 2016). In line with this, participants identified that they utilised their soft skills in leadership and within the ICT industry. Due to the lack of women within the industry, they used their minority as an advantage and soft skills to articulate and story tell their successes, manage stakeholder relationships successfully, be empathic and help create a safe culture. In contrast to existing literature which argues that women in soft skills roles are doing gender by enacting with their gender norms, participants argued that it was a successful way to advance within the industry (Kenny & Donnelly, 2019). Thus, participants were more likely to be successful within the industry by doing gender and enacting within their gendered norms. Although not explicitly stated by participants, the use of soft skills leads to breaking masculine gender norms of leadership (for example, being assertive, competitive and individualistic) within the ICT industry (Crump et al., 2007; Kelan, 2018; Kenny & Donnelly, 2019).

In contrast to other leadership studies which highlight that to be successful leaders

within male-dominated industries females should display androgynous leadership (Esser et al., 2018; Gartzia & Engen, 2012). This is when they incorporate both masculine and feminine traits of leadership. However, it is interesting to note that participants did not specifically say if they included masculine traits into their leadership style apart from being assertive when publicly calling out negative behaviour. However, participants did emphasise their soft skills and feminine traits suggesting that they wanted to highlight what they have done differently and how they are changing a male-dominated industry. This display of participants' soft skills is a stark contrast to (A. E. Martin & Phillips, 2017) research which argued that to increase the confidence of women working in male-dominated industries and in positions of power, that to tackle the confidence gap one should downplay their differences rather than embrace them. Participants using their minority position as an advantage and embracing their feminine side can be reflective of participants wanting to be authentic in their leadership styles and behaviour. If they acted within masculine stereotypes they would lose their authenticity as visible female leaders who are not conforming to the masculine norms of the ICT industry. This is consistent with findings from Esser et al. (2018) who found from interviews with male colleagues working in leadership positions in Germany's ICT industry, that the women enjoyed success in leadership if they are authentic in their leadership behaviours.

As gender minorities, participants could stand out within the industry. They used their minority position in a male-dominated industry as an advantage, for example in stakeholder management and securing business deals. As they were one of the only females in the room, this allowed them to be noticed and remembered. Participants also highlighted that being the only female in the room was a novelty, believing they could make a difference by standing out and being heard. However, speaking up was initially hard and became a learnt behaviour among participants. This implies it was important for participants to flip the negative narrative of being the only female in the industry to a positive one. This can be noted as a strategy that participants used to navigate their careers within a male-dominated industry which has not been commonly identified in existing literature.

This increased visibility of senior female leaders in the industry challenged gender norms and created role models for other women. Common gender norms described

within the ICT industry include gendered hierarchies, cultures and interactions (Griffiths & Moore, 2010; Kelan, 2018; Kirton & Robertson, 2018). Examples of these gendered norms include highly competitive work environments, long working hour cultures, ideal male worker notions and the preference of technical skills over soft skills (Griffiths & Moore, 2010; Kenny & Donnelly, 2019; Kirton & Robertson, 2018). Within male-dominated industries these norms are created and maintained by the behaviours and characteristics of males. Kelan (2018) categorised the various doing gender characteristics of males into four themes; men creating connections with other men, distancing themselves from women, the need to impress others and displaying heroism. In line with the literature, participants' experiences of working within the ICT industry confirmed these doing gender characteristics and themes. However, in contrast to previous research, participants explained that they worked to undo gender through their visibility within the industry. Participants argued that these gendered norms would not change if there was nobody to question the industries and organisational gender norms and behaviours. Thus, through their representation, visibility and active participation in the industry participants followed Butler's (2004) post-structural approach of undoing gender, by questioning existing gender binaries through their identity and behaviours. Additionally, they challenged these gendered norms with support from their leaders.

Participants also identified that their increased visibility within the industry challenged gender binaries within the industry and supported women indirectly. In comparison to participants undoing gender directly by calling out gendered behaviour, the visibility of participants focused on the increased awareness and representation of successful female leaders within the ICT industry. Participants highlighted that this increased visibility allowed other females within the industry to identify with them and this aided in breaking the notion of 'you can't be what you can't see' (Van Oosten, Buse, & Billmoria, 2017).

The importance of visibility for participants in undoing gender was reflective of their experiences within their career. Participants emphasised that throughout their careers the industry was saturated by leaders who were middle-aged men. The lack of female leadership representation made it difficult for participants to have someone to aspire to. Although participants highlighted that through their visibility

they were able to be role models for women, they also explicitly stated that their increase of representation created formal mentorship opportunities for young women in the industry. In conjunction with this, participants identified that they specifically took action to create direct support networks and groups for other women.

There is a vast literature which has highlighted the importance of formal mentoring programmes in the development of women in all industries but in particular male-dominated industries (Jones, 2017; Ramaswami, Dreher, Bretz, & Wiethoff, 2010; Searby, Ballenger, & Tripses, 2015). In line with this literature, most participants explained the importance of formal mentorship programmes for young women in the industry. Participants identified they formally mentored young women to create new opportunities, guided them through their development and supported young women in challenging situations with male colleagues. It is interesting to note participants explicitly explained the importance of having support and a champion backing you to be successful within the industry. This implies that gendered challenges are still present within the industry. Participants also reiterated that formal mentorship built the confidence of young women within the industry. The experiences that participants recounted explained that railroading of young women by male colleagues still happened within the industry. Thus, these formal mentorship programmes allowed participants to empower young women in the industry, build their confidence and provide access to opportunities and networks which typically would be hidden due to the masculine nature of the workforce (Jones, 2017; Kelan, 2018).

In addition to formal mentorship, participants supported other women within the industry through the creation of new organisational policies and development of support groups and networks. The development of these new policies and support groups did not only focus on supporting women in the industry but also educated managers on how to support others. This holistic view of organisational policy changes was essential to have buy in and support from all levels of the organisation. Participants ensured they went beyond organisational legislative requirements to support women and break the masculine ideal male worker norm within these industries (Annabi & Lebovitz, 2017; Kelan, 2018). An example of this includes ensuring that the career projection of a woman is not put on hold when she is on

maternity leave, by keeping them connected and ensuring their performance and pay is reviewed in their absence. The creation of these new organisational policies and support groups can be reflective of barriers participants experienced while working within a male-dominated industry. Thus, they had a focus on ensuring this gendered equality was addressed.

5.5. Influences for undoing gender

The previous sections identified how senior female leaders within the ICT industry are trying to undo gendered stereotypes, assumptions and behaviours. This was shown by participants calling out gendered behaviours and increasing representation and support for women within a male-dominated industry. This section highlights what motivated, influenced and aided participants to make this change. In addition, it identifies how these influences shaped participants' experiences within the industry when trying to undo gender. These influences include their own personal values, other leaders and organisational cultures.

Extant research suggests that female leaders can be powerful change agents (Hovden, 2013; Stainback & Kwon, 2012). As senior female leaders the participants had access to organisational power and resources. Thus, if they work as change agents they can challenge cultures, gendered relations and initiate strategies and policies for change (Hovden, 2013; Stainback & Kwon, 2012). Acting as change agents has been well discussed in literature. However, what motivates and influences female leaders to make this change is typically not discussed. Participants explained that their need for change came from within. This included having a social justice lens and being active diversity and inclusion champions. This commitment to social justice, diversity and inclusion can be reflective of participants' extensive experiences of working in a male-dominated industry (Hovden, 2013; Stainback & Kwon, 2012).

Although it was not explicitly said, participants highlighted that the reason they were advocating and pushing for change was due to genuine and authentic reasons. They were not focusing on managing diversity and business outcomes. It is important to note, that despite their influences, participants also reinforced that this change is not only limited to gender. They made it clear that everybody should be "doing the right thing" for everyone within the organisation. Therefore, this moved away from a gender equality issue and focused more on intersectionality. This shift

can be reflective of participants' increased awareness of other diversity dimensions such as LGBTQI, disabilities and age (Dennissen, Benschop, & Brink, 2018) and the importance of focusing on intersectionality to create a workforce which is inclusive of all diversity dimensions.

Their interests in social justice and being diversity and inclusion champions is only one personal value which motivated participants to undo gender. Participants commonly identified that they used their power and resources to action change, as they wanted to break the cycle of gender inequality within the ICT industry. They wanted to move the industry forward and remove barriers that were once present towards them. Within gendered research in male-dominated industries, there has been a focus on how females disempower one another (Derks et al., 2011; Harvey, 2018; Stainback & Kwon, 2012). Although participants did identify that disempowerment was present throughout their career, they explicitly explained that just because they had it hard, does not mean that other young women needed to experience the same gendered inequalities. This can be reflective of participants' experiences of working within a male-dominated industry. However, it can also be reflective of participants wanting to break the Queen Bee stereotypes within the industry and not create additional barriers for women (Derks et al., 2011; Harvey, 2018; Stainback & Kwon, 2012). Despite having personal values to make this change participants also highlighted that it was their duty to directly foster this change.

The personal influence of participants motivated them into acting as change agents and undoing gender within the ICT industry. However, participants identified that the support they received from their leaders influenced their experiences and ability to undo gender. The support participants received included enabling participants to identify and see their worth, aiding in the navigation of their careers, encouraging participants to bring their whole selves to work and supporting them in voicing their opinions. In line with doing gender literature, participants working within a male-dominated industry doubted their abilities and worth (Cater-Steel & Cater, 2010; A. Powell et al., 2009; Smith, 2013). This doubt was not just linked to their worth in the industry, but also within other aspects of their life, such as motherhood. Upon reflection, this self-doubt may be linked to constantly proving their worth within a male-dominated industry (Cater-Steel & Cater, 2010; A. Powell et al., 2009; Smith, 2013). However, it has also been previously identified in literature that women

doubt themselves within the workplace (Gill & Orgad, 2015; Howe-Walsh & Turnbull, 2016; Peterson, 2010).

Participants highlighted that the support their leaders displayed influenced and aided them in navigating and developing throughout their careers. This influence helped participants break the glass ceiling within the ICT industry (Baumgartner & Schneider, 2010; G. N. Powell & Butterfield, 2015). Although it was not explicitly stated, it was implied that receiving leadership support while working within a male-dominated industry was a significant contributor for breaking down gendered barriers in leadership. It is also interesting to note that the leaders who supported participants included both male and female leaders. However, participants explicitly acknowledged that female leaders were more cognisant of the barriers for women, through their own experience in the industry, and spoke of how they are actively trying to eliminate these barriers. This support created amplification for participants, thus the greater the support participants received from their senior managers, the increase in their need for change.

Participants also identified that moving towards a culture of collaboration and safety where employees are not fearful of management facilitated and supported their efforts in undoing gender. This shift of organisational cultures helped dismantle gendered norms that have become embedded in the practices and structures of the organisation that have led to the disempowerment of women within the industry (Kenny & Donnelly, 2019). Participants highlighted that the movement towards this new culture was due to business outcomes and diversity and inclusion practices. Participants identified that mistakes were common within the industry, in contrast to findings of some studies (Annabi & Lebovitz, 2017; Crump et al., 2007; Griffiths & Moore, 2010; Kenny & Donnelly, 2019) the ICT industry did not only have a masculine culture, but it also portrayed a fear-based culture. Thus, all employees (not limited to females) were scared to take responsibility for their mistakes. This was highly detrimental to business outcomes, as these issues would eventually escalate, have a significant material impact and then be too late to fix.

To avoid negative business outcomes, organisations have shifted into creating a more safe and collaborative culture with transparency. Participants stated that it was their responsibility and legacy to create these cultures. This can be reflective of

participants' personal influence and social justice lens motivating their actions. Additionally, this can link with the notion of participants wanting to progress the industry and be active change agents (Hovden, 2013; Stainback & Kwon, 2012). Participants also explicitly stated that creating cultural change supports everybody within the industry, not only women. This reinforces that participants' personal influence of doing the right thing is not focused on gender equality but inclusivity for all. This shift in organisational culture was not only limited to business outcomes. Participants highlighted the importance that diversity and inclusion awareness and initiatives played in shaping and changing cultural norms. Participants identified that both diversity and inclusion policies and practices had emerged within the last ten years.

Therefore, personal values such as being a diversity and inclusion champion, looking through a social justice lens and trying to break the gendered inequality cycle motivated participants to make change, advocate for equality and undo gender. However, these personal values were shaped and supported through participants' leaders along with the positive shift within organisational cultures. Throughout their influence in undoing gender, it was made clear that participants had only one clear and authentic objective. This was to do right for all employees, not just females within the ICT industry. Thus, participants' personal influence, support from other leaders and organisational culture all worked simultaneously together to support participants in undoing gender within the ICT industry.

5.6 Chapter summary

In conclusion, this chapter firstly identified how social interactions, the negative behaviour of female leaders and the lack of females in technical roles constructed and maintained gender within the ICT industry. In contrast to existing doing gender research participants identified that overt negative social interactions were less common in the industry than when they began. However, gendered social interactions were displayed indirectly for example through resistance to females within the industry and railroading of female leaders. In line with doing gender research participants identified that Queen Bee syndrome, negative behaviours and intra-gendered microaggressions from other female leaders acted as a clear barrier to the development of participants and maintained gender in the industry (Derks et al., 2011; Harvey, 2018; Mavin et al., 2014). Thus, doing gender research should be

extended beyond direct social interactions towards indirect behaviours which are harder to recognise and change (Mavin et al., 2014). Within the doing gender theme, participants also identified how the lack of women in technical roles continues to construct and maintain gender within the industry (Kenny & Donnelly, 2019; Peterson, 2010). This is due to soft skill roles which are typically occupied by women not being valued as highly as technical roles.

Next, this chapter outlined how participants worked to undo gender by calling out and calling in negative behaviours. Calling out and calling in behaviours are not typically discussed in doing and undoing gender research but are common in social justice advocacy (DiAngelo & Sensoy, 2014; Thurber & DiAngelo, 2018). However, participants made it clear that they focused on calling out and in behaviour to reinforce and change negative behaviours and gender norms. Participants called out this behaviour in four ways, directly, formally, from a problem solving approach and through humour. It is interesting to note, participants only mentioned calling out male colleagues' behaviour rather than negative behaviours from other female leaders. In relation to this, participants did not identify if other males in the industry called out negative behaviours which reinforces the uphill battle that female leaders are facing within the industry.

The third theme identified how participants are undoing gender through using their minority as an advantage to stand out within the industry, through their increased visibility and by supporting other women within the industry. Within their representation participants identified that their presence in the industry worked to undo gendered norms. Due to their increased representation and visibility they were able to be role models and support other females within the industry through formal mentorship and the creation of support groups (Jones, 2017; Kelan, 2018). Lastly, this chapter identified the influences that motivated participants to undo gender and how these motivators shaped their experiences. The key motivators for participants in undoing gender was their social justice lens and wanting to make a difference authentically. In line with their social justice lens participants were motivated to undo gender by breaking the cycle of inequality and creating a collaborative and safe working culture.

Chapter Six: Conclusion

6.1 Introduction

This chapter identifies how the research question and sub-questions were answered and details the contributions that this thesis makes. The limitations of the research due to constraints in scoping and research design will be explained. Lastly, this chapter will identify how the findings of this research can contribute and lead to future research.

6.2 Research Outcomes

The research question of this thesis was 'how have senior female leaders shaped New Zealand's ICT through undoing gender?' To answer this research question, the research needed to explore the experiences of senior female leaders working in the ICT industry, what actions they took to undo gendered organisational and social structures and what influenced them doing so. Thus, this research posed three sub-questions:

1. What "doing gender" organisational and social structures have senior female leaders experienced within New Zealand's current ICT industry?
2. How have senior female leaders undone gender within New Zealand's ICT industry?
3. What practices, process, experiences and influences did senior female leaders draw, to undo gendered stereotypes?

To answer these research questions this thesis followed an interpretivist paradigm, which allowed the researcher to actively listen, interact and relate to the participants (Grant & Giddings, 2002; Gray, 2014). The research methodology chosen was interpretive descriptive, which allowed the researcher to describe the experiences of participants while interpreting the meaning of their experiences (Smythe, 2012; Thorne et al., 2004). Twelve senior female leaders working within New Zealand's ICT industry were interviewed for this research, these interviews were conducted in Auckland and Wellington. Semi-structured interviews were used to collect data, which provided structure throughout the interviews but flexibility for the researcher to probe new questions from participants' answers. This allowed participants' experiences to be explained further (Rubin & Rubin, 2005). The data

collected in these interviews were analysed using thematic analysis and identified four themes including: 'doing gender', 'calling it out', 'women shaping the industry' and 'influences for undoing gender'.

To identify how senior female leaders worked to undo gender within the ICT industry this thesis needed to identify what social and organisational structures construct and maintain gender. This thesis identified two different types of social interactions. Firstly, the social interactions displayed by men within the industry which included overt discrimination, leadership bias and negative gendered assumptions and stereotypes. Examples of this behaviour included, men railroading women in meetings, questioning their skills and abilities and not accepting them into the industry. Participants stated that overt negative social interactions were less common in the industry now as compared to when they started their careers. This could be due to two reasons: firstly, participants' increased seniority and position that leads them to become less susceptible of overt discrimination and negative social interactions; secondly, through the changing landscape of work environments where overt discrimination is not accepted, and the emphasis now put on diversity and inclusion practices has aided in shifting organisational cultures into safer environments.

The second negative social interactions were the negative behaviours displayed by women within the industry. Unlike the behaviours displayed by men, participants identified that intra-gendered micro-aggressions from other female leaders presented additional barriers for participants to overcome within the ICT industry. This thesis argues that micro-aggressions are just as important as overt discrimination as they are insidious in nature and hard to change. They are harder to recognise and change but are deemed as detrimental as overt discrimination (Mavin et al., 2014).

In addition to the negative social interactions displayed by men and women within the industry, the lack of women in technical roles within the ICT industry was an organisational structure that continues to maintain gendered norms within the industry. A norm within the industry is that the technical expert is highly valued. However, women are commonly associated with soft skill roles such as Business Analyst and Project Managers. Therefore, for women to be accepted into the industry they need to show their technical competency or show soft and feminine

skills which link back to their sex category (Comeau & Kemp, 2011; Ensmenger, 2010; Kenny & Donnelly, 2019). Therefore, in answer to the first sub-question, this thesis found that organisational structures such the lack of women in technical roles and negative social structures displayed by men and intra-gendered microaggressions displayed by women is creating and maintaining gender within the ICT industry. Understanding the doing gender organisational and social structures senior female leaders experienced was essential in exploring how senior female leaders can undo gender.

To answer the second sub-question, this thesis identified two practices used by senior female leaders to undo gender within the ICT industry. Firstly, calling out and calling in gendered social interactions, assumptions and stereotypes. Secondly, participants used their minority as an advantage to stand out within the industry. This representation increased their visibility and challenged gender norms. Additionally through their increased visibility participants supported other women within the industry. Calling out and calling in behaviours are concepts which are typically not discussed in doing and undoing gender research but are common in social justice advocacy (DiAngelo & Sensoy, 2014; Thurber & DiAngelo, 2018). However, participants identified that they called out negative social interactions, calling out these interactions showed that these behaviours are not acceptable within the industry. Participants highlighted that calling out negative behaviour worked to undo gender within their industry. Furthermore, they also identified that their presence and questioning of norms within the industry aided in undoing gendered norms such as a highly competitive environment, long workday cultures and ideal male worker norms. The increased visibility of women within the ICT industry created role models and support for other females within the industry. This support included informal and formal mentorship and development of support groups. Thus, the increased representation of women in the ICT industry challenged masculine environments and aided in removing barriers for other women.

To answer sub-question three, participants identified three influences which motivated and supported them in undoing gender: their internal motivations for social justice, change of organisational cultures and support from other leaders. Participants identified that they were motivated to undo gender as they wanted to

break the cycle of inequality in the industry. In addition to this, through their personal values, they were influenced to change the organisational culture of the industry into a collaborative and safe working culture where everyone of different diversity dimensions would succeed. Participants reinforced that they were able to undo gender and advocate for gender equality through the support they received from their leaders.

Therefore, how have senior female leaders shaped New Zealand's ICT industry through undoing gender? They have called out negative social interactions which maintain stereotypes and create additional barriers for women within the industry. Participants also challenged gender binaries and historical industry norms through their participation within the industry. This representation created role models and support networks for others in the industry. Lastly, senior female leaders shifted the industry from fear-based, individualistic and competitive to a culture of safety and collaboration.

6.3 Contributions and significance of research

This thesis focused on how the construction and maintenance of gender can be undone by senior female leaders within the ICT industry. It identified practical changes that can eradicate doing gender barriers, instead of just identifying the negative experiences women face while working within a male-dominated industry (Cater-Steel & Cater, 2010; Griffiths & Moore, 2010; Kirton & Robertson, 2018). While there is research on the undoing of gender theoretically by (Butler, 2004; Deutsch, 2007; West & Zimmerman, 1987), how gender is undone in practice within male-dominated industries is still under researched. While it is true that barriers exist to impede women's career progression within a male-dominated industry, it is reasonable to assume that senior female leaders to some degree, have access to the resources, power and motivation to act as agents of change to undo gender within the ICT industry (Hovden, 2013; Stainback & Kwon, 2012). Therefore, the findings of this thesis contribute knowledge to the practice of undoing gender by identifying specific actions taken by women in undoing gender. This includes calling out negative social interactions and gendered assumptions, questioning gender norms through their representation and presence within the industry and by developing support networks and shifting the fear-based organisational culture to one of safety.

This thesis, while useful in understanding what the current barriers are within the industry, is even more critical in providing a basis for how to mitigate and deconstruct these barriers. Firstly, it used the concepts of calling in and calling out gendered assumptions, stereotypes and behaviours to add to undoing gender practices. Calling out and calling in are concepts which are not typically discussed in undoing gender literature, but are common in social justice advocacy and macroaggression counselling studies, however, this thesis uses these concepts within an organisational and undoing gender context (DiAngelo & Sensoy, 2014; Thurber & DiAngelo, 2018). In addition to this, calling out and calling in introduced a call to action on how gender can be undone on an interactional level, providing guidance on a practical level rather than solely a theoretical focus on the construction and maintenance of gendered inequalities within the ICT industry (Deutsch, 2007; DiAngelo & Sensoy, 2014; Thurber & DiAngelo, 2018).

Secondly, from a practical and organisational perspective, this thesis identified the gendered barriers which are still present within the ICT industry. Additionally, this thesis also identified the necessary factors to enable participants to undo gender and increase gender inclusivity throughout the industry. Previous research focused on barriers for women working within the ICT industry such as overt discrimination (Cater-Steel & Cater, 2010; Griffiths & Moore, 2010; Kenny & Donnelly, 2019; Kirton & Robertson, 2018; Mavin et al., 2014). However, the findings of this thesis identified that unconscious biases and microaggressions are displayed by both men and women within the industry. These behaviours continue to construct and maintain negative gendered stereotypes and barriers. Thus, organisations need to move beyond discussions that focus solely on overt discrimination. Instead, the same level of attention or even more should be focused on microaggressions which are harder to identify and dismantle (Mavin et al., 2014).

This thesis also contributed to practice with regards to the undoing of gender. It identified that the creation of safe and collaborative organisational cultures are essential for breaking the fear-based male-dominated norms within the ICT industry as it allows all employees to be safe at work and ask for support when needed. It was essential to acknowledge that several organisations within the ICT industry have a fear-based culture as this is not well documented in previous literature. In addition to this, participants reinforced the importance of mentorship

programmes, diversity and inclusion practices, formal networks and manager support. These concepts have been discussed widely in literature on breaking gendered barriers in general (Bernstein, Crary, Bilimoria, & Blancero, 2015; Sahoo & Lenka, 2016). However, this thesis reinforces that these practices are still effective and needed for ICT organisations due to the gender imbalance and barriers still present for women within the industry.

6.4 Limitations

Despite the theoretical and practical contributions this research has contributed to, it is still essential to acknowledge the key limitations of the research. These limitations link directly to the research design of the thesis and limited theoretical scope.

Firstly, as this research was conducted for a Master's thesis there were limitations on the sample size of participants interviewed. The researcher interviewed 12 participants. Although the background of the participants varied from private and public sector to self-employment, this sample size is not large enough to present an accurate reflection of the experiences of all senior female leaders within New Zealand's ICT industry. Additionally, this research interviewed participants in New Zealand's two largest cities, Auckland and Wellington. Thus, this research did not include the experiences of senior female leaders working in smaller cities and regions. It is important to consider geographical contexts as factors such as migration, resourcing and the gender pay gap may have varying impacts on their experiences. This is confirmed by (AbsoluteIT, 2016b) research which identified that Auckland and Wellington have the highest median salary for women within the industry but this drops for cities such as Hamilton and Christchurch.

Next, this research did not consider intersectionality within the scope of the thesis. Intersectionality is the connection of different diversity dimensions such as age, ethnicity, sexuality, class and disabilities (Hoskin, Jenson, Blaire, & Carter, 2017). Intersectionality within feminist research allows for one to look at discrimination and inequality from various lenses as gender oppression can be further informed by concerns such as racial or ageist factors (Hoskin et al., 2017). As this research focused on senior female leaders, it can be argued that it adopted a Western feminist approach of addressing and identifying gender differences and inequalities only

(Hoskin et al., 2017). The research predominantly considered the experiences of white professional women and did not consider the experiences of other marginalised groups. Furthermore, the experiences of women who are not in management and senior leadership were not included. This research identified the barriers of participants throughout their career and how they use their status to undo gender within the industry, however, their experiences may be different to women who are younger and in junior positions within the industry. An example of this is that participants identified that awareness in the industry has shifted from overt discrimination to unconscious bias and microaggressions within the industry. However, participants' perception of a shift in culture, could be because of a genuine shift within the industry, or a shift of perception and experiences of participants due to their increased status and hierarchy of participants.

Lastly, this thesis focused on how female leaders within the ICT industry are undoing gender but did not take into account the responsibility of men in dismantling the gendered norms, assumptions and stereotypes that favour them within the ICT industry. Gendered research tends to focus on how men create inequalities for women within male-dominated industries rather than how they can create equality (Kelan, 2018). While this research specifically focused on women's responsibility of undoing gender it ignored males responsibility in creating change. However, this thesis did highlight that women have the capacity and agency to enact change and better their work environments.

6.5 Future research

This thesis has contributed to our understanding of doing gender organisational and social practices, calling out and calling in social interactions and individual influences for undoing gender.

Future research could build on this thesis' findings and identify how inequality processes within male-dominated organisations could be dismantled or mitigated in practice and the outcomes of these practices. In addition to this, future research within the undoing gender theory should look at practices such as calling out and calling in, and how effective they are in undoing gender. Furthermore, future research could explore how a social justice concept can be integrated into organisational practice.

Additionally, future research conversations of undoing gender should incorporate intersectionality and men's agency to develop a holistic view of how gender equality can be and must be derived from the efforts of the two traditional genders. Including intersectionality within a doing and undoing gender framework can provide a critical holistic view of the barriers for females who link to different diversity dimensions. In addition to this, intersectionality within undoing gender research will identify the complexity of power structures for different diversity dimensions and how these can be dismantled. Furthermore, future studies should focus on men's responsibility and capacity in undoing gender. Incorporating men in undoing gender and gender equality conversations shift the responsibility away from women advocating for change. Introducing men into undoing gender conversations allows researchers and organisations to understand how men believe they are firstly doing gender and creating gendered differences and if appropriate, what practices are they using to undo this (DuBow & Ashcraft, 2016; Kelan, 2018).

6.6. Conclusions

This thesis aimed to explore how senior female leaders have shaped New Zealand's ICT industry through undoing gender. This thesis focused on the theories of doing and undoing gendered as proposed by (Deutsch, 2007; West & Zimmerman, 1987). The under representation and barriers of women working within this industry has frequently been discussed in the literature (Cater-Steel & Cater, 2010; Griffiths & Moore, 2010; Kenny & Donnelly, 2019; Kirton & Robertson, 2018). Thus, this thesis took a different lens by addressing how senior female leaders have undone within New Zealand's ICT industry. Employing this lens shifted the conversations from barriers and gendered maintenance to practical examples for change and gender equality for present and future women within the ICT industry.

This thesis identified that gender was maintained within the ICT industry through negative social interactions, negative female behaviours and the lack of females in technical roles. Previously, gendered inequality was maintained through the exclusion of females from typically male normed activities (Deutsch, 2007). However, the entrance of females into male-dominated industries has increased and doing gender is now present through social interactions (Deutsch, 2007). This thesis found that doing gender behaviours were displayed through the social interactions of other males and female leaders within the industry. However, the lack of females

in technical roles also maintained gender as women were interacting and working with their soft skills despite resisting gender norms by working within a male-dominated industry. Thus, the soft skills of women were interpreted to be less valuable as the technical skills of men within the industry; this can be argued as another exclusion method towards women within the ICT industry (Comeau & Kemp, 2011; Ensmenger, 2010; Kenny & Donnelly, 2019).

Next, this thesis illustrated that participants undo gender through calling in and calling out negative social interactions and through their representation within the industry. Aligned with Deutsch (2007) calling out and calling in gender shifts the inquiry of interactional barriers into change. Deutsch's (2007) research asked if women enter into male-dominated industries how does this reduce gender differences? This thesis argued that is it reduced through participants calling out and calling in gendered norms and behaviours that did not support their inclusion within the industry. Additionally, through participants representation and actions, gender barriers within these positions begin to collapse which slowly diminishes gender difference over time. These new practical insights into undoing gender increase our knowledge of undoing gender within and organisational context.

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Appendices

Appendix 1: Government Tech initiatives

Category / Programme	Organisation	Target	Region
Strategy			
ICT Sector plan	MBIE	All	National
ICT Workforce Skills Forum	MBIE	All	National
Long term skills/Curriculum	MinEd/NZQA	All	National
Nurturing Home Grown Talent	CDC	All	Canterbury
Tertiary investment strategy	TEC	All	National
Increasing the immediate talent pool			
Job Fairs (Australia, SXSW)	MBIE, INZ	All	International
Job Fairs	EDA's	All	National
Immigration policy	INZ	All	International
New Zealand NOW	INZ	All	International
Innovation Islands Campaign	INZ	All	International
Skillsfinder Tool	INZ	All	International
Tech Connect	INZ	All	International
Retraining currently available workforce			
Conference and events	Multiple	All	National
Dev Academy	Enspiral	Retraining	Wellington
Free 4 U Computing	Unitec	Retraining	Auckland
Industry Connect	Industry Connect	Work prep	Auckland
International Computer Drivers License IITP/Kiwiskills		Retraining	National
Microsoft Virtual Academy	Microsoft	Online ICT	National
Professional Training	Eg ACE Training	Development	National
Vendor training	Multiple vendors	In person	National
Placement of current graduates			
Summer of Tech	Summer of Tech	Tertiary	Akl/Well
Industry Connect	Industry Connect	Tertiary	Auckland
Dunedin Sexy Summer Jobs	DCC	Tertiary	Dunedin
Callaghan R&D Student Grants	Callaghan	Tertiary	National
Corporate Intern Programmes	Multiple	Tertiary	National
Tertiary Institute programmes	Multiple	Tertiary	National
Future talent pools			
Bright Sparks	The Skills Org	Secondary	National
Capital E Education	Wellington Museums	K-12	Wellington
Code Clubs	Code Club Aotearoa	K-12	National
Codeworx Challenge	Orion Health	Secondary	National
Computer Science for High School Google		Teachers	Akl/Chc
Dunedin Careers Festival	DCC	Secondary	Dunedin
Future in Tech	IPENZ	Secondary	National
Gather Workshops	Gather	K-12	National
Girlsinnov8	St Cuthbert College	Secondary	Auckland
ICT-Connect	IITP	Secondary	National
ICT Grad Schools	MBIE/TEC	Tertiary	Akl/Wel/Chc
Kiwibots - VEX Robotics	Kiwibots	Secondary	International
NIWA Regional Science Fair	NIWA	Secondary	National
OMG Tech Workshops	OMG Tech Trust	K-12	National
Robo Cup Junior	Robotics NZ Trust	K-12	National
Robogals	Uni of Auckland	Secondary	Auckland
PopUp Science	PopUp Science	K-12	Wellington
Programming Challenge for Girls	PC4G	Secondary	National
Project X	IPENZ/IET	Secondary	Christchurch
Rails Girls	Ruby on Rails	Adults	Akl/Well
She#	Unitec and sponsors	Girls	Akl/Well
STEAM Ahead	Steam Ahead	Girls+Mums	Auckland
Student Accelerator Programme	Microsoft	Secondary	National
Te Papa	Te Papa Museum	K-12	Wellington
The Mind Lab	Unitec K-12 + Teachers		National
The High Tech Youth Network	HTYN Trust	K-12	National
Encouraging women & addressing diversity			
IT women groups / meet ups	various	All	National
Computer Chicks	Cant Uni Comp Sci	Tertiary	Christchurch
ClojureBridge (coding for women)	Clojurebridge	Women	Auckland
Shadow Tech Day	MIT	Secondary	Auckland
Fantail Network	Multiple sponsors	Women	Auckland
Geek Girls Dinners Wellington	various	Women	Wellington
Global Women	various	Exec women	National
Maori ICT development fund	TPK	Maori	National
National Advisory Council of Women Min. WomenAffairs	Women		National
NZ Tech Women	NZTech	Women	National
Other girls in tech groups	Various	Tertiary	National
Refactor	Refactor	Women	Auckland
Tech Girls	CPIT	Tertiary	Christchurch
TPK Maori Cadetship	TPK	Maori	National
W initiative	KPMG	Women	Akl/Well
Women on Boards	Governance NZ	Women	National
Women's mentoring programme	Uni of Auckland	Tertiary	Auckland
Women of Influence Awards	Westpac	Women	National

Appendix 2: Letter of ethics approval

29 January 2019

Katherine Ravenswood

Faculty of Business Economics and Law

Dear Katherine

Ethics Application: 19/9 **The undoing of gender by women leaders in ICT careers**

I wish to advise you that a subcommittee of the Auckland University of Technology Ethics Committee (AUTEC) has **approved** your ethics application.

This approval is for three years, expiring 25 January 2022.

Standard Conditions of Approval

1. A progress report is due annually on the anniversary of the approval date, using form EA2, which is available online through http://www.aut.ac.nz/research/researchethics.
2. A final report is due at the expiration of the approval period, or, upon completion of project, using form EA3, which is available online through http://www.aut.ac.nz/research/researchethics.
3. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form: http://www.aut.ac.nz/research/researchethics.
4. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
5. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.

Please quote the application number and title on all future correspondence related to this project.

AUTEC grants ethical approval only. If you require management approval for access for your research from another institution or organisation then you are responsible for obtaining it. You are reminded that it is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard.

For any enquiries please contact ethics@aut.ac.nz

Yours sincerely,

Kate O'Connor

Executive Manager

Auckland University of Technology Ethics Committee

Cc: xhy8238@autuni.ac.nz; Candice Harris

WOMEN IN TECH

Are you a senior female leader within New Zealand's ICT industry?

I am looking for senior female leaders in positions similar to Chief Information Officer, Chief Technology Officer, IT Manager and Technical Operations Officers who hold a minimum of two years senior leadership experience and have worked in the ICT industry for a minimum of five years. This study is open to senior leaders who have worked in any business type and size but does not include telecommunications.

The aim of this research is to understand how you have developed your career in ICT, and what changes you have made or think need to be made to enable more women to successfully make it to senior leadership level.

Participation in this research will involve a confidential 60-minute face to face interview at a location that best suits you.

For more information please email Karishma Prasad on xhy8238@autuni.ac.nz

This project has been approved by Auckland University of Technology (AUT) Ethics Committee on 29/01/2019. Application number 19/9

Appendix 4: Participant Information Sheet

Date Information Sheet Produced:

10th of November 2018

Project Title

The Undoing of Gender by Women Leaders in ICT careers

An Invitation

Dear Participant,

I am a postgraduate student studying my Masters in Human Resource Management and Employment Relations at Auckland University of Technology (AUT). A requirement for this study is the completion of a thesis which involves conducting research.

The purpose of this research is to identify how women leaders in New Zealand's ICT industry contribute to change. To achieve this, I will interview 12 female leaders within the ICT industry who hold a minimum of two years senior leadership experience and five years of experience working within the ICT industry.

The interview will be face to face and approximately 60 minutes and it will be recorded for transcription purposes. As your participation is voluntary you are able to withdraw from the research before the data collection is completed or skip any questions you do not feel comfortable answering.

The data collected from this research will be kept confidential. The names of yourself and your organisation will be changed to ensure this confidentiality. However, due to your high profile as a senior leader confidentiality may be limited. A summary of the findings for this research will also be made available to you if interested.

I invite you to take part of this research as your participation will be of great value to my research and the ICT industry.

Please let me know if you have any other questions.

I look forward to hearing back from you shortly.

Kind regards,

Karishma Prasad.

What is the purpose of this research?

The purpose of this research is to highlight how female leaders within the ICT industry contribute to change. This contribution to change is in relation to supporting women within the ICT industry regarding factors such as working in a male-dominated industry.

The findings and recommendations which will arise from this research could potentially benefit organisations in the ICT industry or in Science, Technology, Engineering and Mathematics (STEM). This research will also contribute to my Masters of Business qualification and may be used in conference papers and published in journal articles.

How was I identified and why am I being invited to participate in this research?

As stated in this invitation the main criteria for this research is that you are a female leader who has worked within the ICT industry for five years and have a minimum of two years senior leadership experience. This leadership experience includes being able to contribute to change. You will have received information about this research via social and professional networks, and then made contact with me, the researcher. You have been invited to participate in this research due to your senior leadership experience and the value these experiences bring to the research.

How do I agree to participate in this research?

Once you have read through this information sheet and identified any questions you may have, participation in this research can be confirmed via email. However, before the interviews commence a consent form (attached) must also be read and signed. It is important to note that your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will neither advantage nor disadvantage you. You are able to withdraw from the study at any time. If you choose to withdraw from the study, then you will be offered the choice between having any data that is identifiable as belonging to you removed or allowing it to continue to be used. However, once the findings have been produced, removal of your data may not be possible.

What will happen in this research?

This research will be a 60-minute face to face interview, which will ask about your experience of working within the ICT industry and as a female leader within the industry. Once the consent forms are signed the interview will commence. During the interview, I will ask you questions and listen to your experiences. The interview will be digitally recorded for transcription purposes and I will be taking some notes throughout the interview.

The data collected from this interview will then be transcribed, analysed and reported in my Master's thesis.

What are the discomforts and risks?

There are minimal discomforts and risks associated with participating in this research. However, as this research is focusing on your experiences of working within the ICT industry you may recall some negative experiences. If you do not feel comfortable answering any questions you do not have to.

How will these discomforts and risks be alleviated?

These discomforts and risks within the interview process will be alleviated as if you do not have to answer any question you do not feel comfortable answering. You may also withdraw from this study at any time up to the completion of data analysis.

What are the benefits?

You may benefit from this research as it will identify how female leaders within the ICT industry can contribute to change. The findings of this research will also highlight examples of how other female leaders in your position are making change in the industry. The findings of this research could potentially be used by employers within other male-dominated industries to change their organisational culture, policies and structures which maintain and construct gender.

I will benefit from this research as I will understand the culture of a male-dominated industry and how females within this industry contribute to change. This will further help in my career when advocating for gender equality issues. Lastly, this research will aid in the completion of my thesis thus I will receive a Master's Degree. This research may also result in journal articles and conferences for my supervisors and I.

How will my privacy be protected?

Your privacy will be protected throughout this research as both your name and organisation's name will be changed during the reporting process. As a senior leader within the ICT industry, this will protect your privacy through limited confidentiality as you may be recognisable through your answers due to the leadership position you hold.

Your privacy will also be protected as you will have the opportunity to review your transcript and ensure there are not answers which may compromise your privacy.

All digital files will be stored in a secure folder on the AUT network. However, the hard copies of the consent forms and data will be stored separately in my supervisors AUT offices. They will be stored in a locked draw. Once the research has been completed all hard copies will be destroyed, by using the confidentiality bins which are provided by the AUT management department. If there are softcopies this will be deleted from secure folder.

What are the costs of participating in this research?

There is no cost to you for participating in this research apart from 60 minutes of your time.

What opportunity do I have to consider this invitation?

Once you have received this information sheet and the consent forms you have two weeks to make an informed decision and to consider the invitation.

Will I receive feedback on the results of this research?

Yes, if you tick the section in the consent form which highlights you are interested in receiving a summary of the research findings you will receive a soft or hard copy of the research after completion.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Associate Professor Katherine Ravenswood, *katherine.ravenswood@aut.ac.nz,* 09 921 9999 ext 5064

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, Kate O'Connor, *ethics@aut.ac.nz* , 921 9999 ext 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet and a copy of the Consent Form for your future reference. You are also able to contact the research team as follows:

RESEARCHER CONTACT DETAILS:

Name: Karishma Prasad

Email: xhy8238@autuni.ac.nz

Project Supervisor Contact Details:

Name: Dr Katherine Ravenswood

Email: katherine.ravenswood@aut.ac.nz

Phone: 09 921 9999 ext 5064

Approved by the Auckland University of Technology Ethics Committee on 29/01/2019, AUTEC Reference number 19/9.

Appendix 5: Consent Form

Consent Form

Project title: *The Undoing of Gender by women leaders in ICT careers*

Project Supervisor: *Dr Katherine Ravenswood*

Researcher: *Karishma Prasad*

○   I have read and understood the information provided about this research project in the Information Sheet dated 10th November 2019.

○   I have had an opportunity to ask questions and to have them answered.

○   I understand that notes will be taken during the interviews and that they will also be audio-taped and transcribed.

○   I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without being disadvantaged in any way.

○   I understand that if I withdraw from the study then I will be offered the choice between having any data that is identifiable as belonging to me removed or allowing it to continue to be used. However, once the findings have been produced, removal of my data may not be possible.

○   I agree to take part in this research.

○   I wish to receive a summary of the research findings (please tick one): Yes○ No○

Participant's signature : ....

Participant's Name :   ....

Participant's Contact Details (if appropriate) :

....

....

....

....

Date :

Approved by the Auckland University of Technology Ethics Committee on 29/01/19 AUTEC Reference number 19/9

Appendix 6: Interview Protocol

Interview protocol	
Pre-interview	- Reiterating key information from the participant information sheet - Reminding the participate that participation is voluntary, they can halt the interview at any time and don't need to answer questions they don't feel comfortable with. - Explain that field notes will be taken and the interview will be recorded - Receive the signed consent form from the participant
During interview	- Ask open ended questions and probed new questions from the participants answers. <u>Interview questions</u> **PART A** - Tell me about your career in ICT? - What is your role currently? - How many people do you manage/lead? (Locus of control) - Length of working in the ICT industry? - Length of leadership? - What type of roles have you held? - What types of companies? - How did you build your career in ICT? - Linear - Rare skill set - What is the pace of the ICT industry like? - What does this mean for learning? - What motivated you/lead you to a career in ICT? - Education - Mentors/influence - How did you start in ICT - By chance? Interest in a particular field? - When do you realise you had a career in ICT? - What strategies have you used to create a successful career in ICT? **PART B** - Have you experienced any challenges/obstacles as a female leader in the ICT industry? - How did you respond to these challenges? - What sorts of organisational cultures have you experienced in this industry? - What does this culture mean for women working in the ICT industry? - Is there a difference for men and women? - If so, what creates those differences? - What are the benefits for women working in the ICT industry? - What are the difficulties for women working in the ICT industry? - What types of leadership styles work in the ICT industry? - Are you seeing an increased diversity of women entering ICT? **PART C** - How has the industry changed for women during your career? - What was your roles in these changes? - How would you make the ICT industry more supportive for women if you could? - What do you think would retain women in this industry? - What would you change if there is nothing stopping you? - Is there anything else you want to touch on?
Post interview	- Thanked the participant for their time - Reminded the participant their transcript will be sent to them to approve before data analysis commences.

Appendix 7: Transcriber Confidentiality Agreement

Confidentiality Agreement

Project title: *The Undoing of Gender by women leaders in ICT careers*

Project Supervisor: *Dr Katherine Ravenswood*

Researcher: *Karishma Prasad*

○   I understand that all the material I will be asked to transcribe is confidential.

○   I understand that the contents of the tapes or recordings can only be discussed with the researchers.

○   I will not keep any copies of the transcripts nor allow third parties access to them.

Transcriber's signature: ....

Transcriber's name: ....

Transcriber's Contact Details (if appropriate):

....

....

....

....

Date:

Project Supervisor's Contact Details (if appropriate):

....

....

....

....

Approved by the Auckland University of Technology Ethics Committee on 29/01/19 AUTEC Reference number 19/9