



Women and Technology: Why the Gender Gap?

*An exploratory study into the perceived influencers of low Gender Diversity in
the Technological Department of a Multi-National Technology Solutions
company in Ireland*

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A Dissertation submitted in part fulfilment of the requirements for the Masters
in Management.

Submitted: September 2015

Word Count: 18,105

Abstract

This Dissertation explores the causality of the Gender Gap within the Irish offices of the technical department of Company X, a large technology solutions provider.

Diversity has been recognised as a key cornerstone of employing a workforce which enables increased competitiveness, innovation and financial performance (IBEC, 2014) however large technical companies are continually struggling to employ a gender diverse workforce within their technical departments (Peck, 2015).

Current literary works offer theoretical research around gender differences and diversity within the workforce however little real-life accounts from a technology perspective in Ireland was uncovered.

This exploratory research took a qualitative approach for which 6 interviews were conducted in total. Interviews were conducted with 6 professional women employed within the technical Global Support and Deployment (GSD) department of Company X based in Ireland and their perspectives were sought as to why this Gender Gap existed, what experiences they had with a Gender Gap in technology and what could influence a more gender diverse workforce within the Irish office of Company X's GSD department.

The research uncovered that the belief behind this Gender Gap within the technological GSD department of Company X is as a result of young women not choosing technology as a field of study. This has resulted in few women with the competencies to fulfil the positions available. This choice is believed to be as a result of a lack of interest and misunderstanding about the field as a consequence of certain influences and encouragement in early childhood which will be explored in more detail throughout the Dissertation.

Acknowledgements

I would like to take this opportunity to express my warmest gratitude to all in NCI who supported me throughout the course of the past two years along with my colleagues who have shown incredible support and patience.

A special thanks to my supervisor Corina Sheerin, for her constant support, guidance and patience. Thank you.

To the 6 participants who kindly agreed to give me time from their busy schedules and allowed for an open, honest interview, this has been invaluable, thank you.

Finally, on a personal note;

To my Fiancée, Darren, we started this journey together and I would not have made it over the finish line without you. This is dedicated to you.

To our parents and our family, thank you all for your support, love and tolerance. This has been a large undertaking and without your help would not have been possible.

Abbreviations

RM – Resolution Manager

TL – Team Leader

QL – Quality Lead

EMEA – Europe, Middle East and Africa

ICT - Information and Communications technology

GSD - Global Support and Deployment

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Declaration

I hereby certify that this material, which I now submit for the assessment of the programme of study leading to the award of Masters Management is entirely my own work and has not been submitted as an exercise for a degree at this or any other university. Any works within have not been taken from the works of others and to the extent that any such work inspired from others has been acknowledged and correctly referenced within the body and text of my work.

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Chapter 1 – Introduction

1.1 Opening Remarks

Although an increasing ratio of female to male graduates in developed countries has been seen in recent years, according to the World Economic Forum (2011), it would seem evident to most that this has not translated into an increased number of women working within the technology sector. This may be as a result of the low numbers of women opting to actually pursue technology as a field of study but why is that the case? The European Commission has released figures which show a very low percentage of females in Ireland graduating with tertiary education from an engineering field of study. The report shows very poor figures of 16.9% in 2011, only 9.7% behind the European figures of 26.6% (European Commission, 2014).

A recent article released by the European Commission has expressed concern over the level of technical skillset of people compared to the requirements of jobs that will be coming to fruition in the near future. Within this report it is forecasted that an approximate 825,000 ICT jobs will be unfilled across Europe by the year 2020 (European Commission, 2015). With the unemployment percentage of women in Ireland at 8.3% (CSO, 2015) it is not a far stretch to see the benefits that could be gained from increasing the number of females in the technical sector and as such, reducing the Gender Gap.

The following research paper will explore the potential causes of the Gender Gap within the Global Support and Development department of the EMEA headquarters of a multi-national Technology Solutions provider based in Dublin in an effort to

1. Uncover if there is a perception of macro-environmental forces which influence the gap either positively or negatively
2. Reveal actionable points which may help others to lessen such a gap in the future

It is not difficult to find a myriad of articles bouncing around at this time regarding the benefits of hiring a gender diverse workforce and how such diversity will help the firm's bottom line, staff morale and competitiveness, but why is this research and campaigning needed? Greater diversity in ones way of thinking can lead to greater developments and innovation, so why do we not see a directly correlating balance of gender diversity in workplaces? As initially discussed by Berger et Al (1972) and further developed by Ridgeway (1991) societies have a perception of different demographic groups' value and their competency. Perhaps it is these preconceived ideas that has hampered the growth potential of many firms and industries, as the instrumental input of diversity has not occurred? Fields such as science, technology, engineering and maths (STEM) still seem to be highly dominated today by men (Huhman, 2012), and it seems are still seen as the stereotypical traditional 'male role' by many.

The majority of articles tend to focus on lack of gender diversity within the likes of the financial sector however as discussed there seems to be lower gender egalitarianism within the high-tech industries. The following research will look at just what is impeding so many women from entering or remaining in the technology sector and what can be done to help promote women within this sector.

Companies are striving to promote a fair and equal workplace and gender diversity is among the top of the list when it comes to equality. Organisations are promoting such diversity initiatives not only because it is the right thing to do but grown out of countless studies which have shown gender diversity helps promote growth with productive competition, innovation and increased depth of collective intelligence.

While this focus on gender diversity and the benefits that accompany it will prove greatly beneficial to industries, it should also be approached with caution as mandating diversity within companies or in fact economies may allow for promotion to hit quotas rather than promoting those who will excel in the role.

Once factors deterring women from entering or remaining in the technology arena have been identified clearly then it may be possible to action and increase the overall number of females interested in the field. With a more equal pool of male and female workers across all roles within the technology sector higher gender egalitarianism should be attained at all levels allowing for promotion and hiring based on merit alone.

1.2 Research Grounding

This research is set within the technology sector specifically focusing on the Global Support and Deployment (GSD) department of a large American based, multi-national, Technology Solutions provider whose EMEA headquarters are located in Dublin, Ireland. The GSD department employs people from a variety of nationalities, culture and educational background. While diversity in all other senses is highly evident throughout the organisation, the gender ratio in the department is 17:1 male to female. While the researcher focused on the Irish offices in particular for the purposes of this Dissertation it should be noted that this is simply a microcosm of the global organisation and any findings could be mirrored throughout other offices as deemed appropriate.

The research hoped to unveil the potential causes of the gender gap evident in this department with the aim of finding actionable areas to assist in reducing this gap in the future and leading to gender egalitarianism throughout the department.

Should this be possible the department will be enabled to employ an extensively diverse workforce which according to a variety studies and literature such as IBEC (2014), Tim Griffen (2015), CEO of Dell UK and Google (2014) can help lead to increased competitiveness, better decision making and radical innovation.

1.3 Brief Overview of Findings

Through the course of this research dissertation the researcher has uncovered that the belief behind this Gender Gap within the technological GSD department of Company X is as a result of women not choosing technology as a field of study. This has resulted in few women with the competencies to fulfil the positions available. This choice is believed to be as a result of a lack of interest and misunderstanding about the field as a consequence of influence and encouragement in early childhood and will be explored in more detail in the coming chapters.

1.4 Research Title

The title of this research paper is “Women and Technology: Why the Gender Gap? An exploratory study into the perceived influencers of low gender diversity in the Technological department of a Technology Solutions company in Ireland.

1.5 Research Aim

The aim of the following research is to explore the potential causes of the gender gap which exist specifically within the global support and deployment department of the EMEA headquarters of a multi-national Technology Solutions provider based in Dublin, Ireland.

Many companies are taking measures to promote a fair and gender diverse workforce however the gender gap in technology along with other STEM fields it still exceedingly prevalent. The researchers aim is to attempt to understand the potential causes contributing to this gender gap which is evident in the technology sector of the chosen company and reveal actionable areas which may help to reduce the gap in future.

1.6 Objectives

The objectives of this exploratory research study are to

1. Uncover if any forces either internally or externally which could contribute to the gender gap evident within the GSD department of Company X specifically, or at a broader level the technology sector in Ireland
2. Uncover why such a gap might exist and what, if any, macro-environmental forces influence it either positively or negatively
3. Reveal actionable points which may help others to lessen such a gap in the future

1.7 Company Profile

For the purpose of this Dissertation the Irish offices of a large American multi-national Technology Solutions company will be the subject of the research. This company has its EMEA headquarters located in Dublin with approximately 2,300 people employed in Ireland as of August 2015.

From its Irish offices, this company provides Services Sales which includes pre and technical sales and financial services, Readiness and Capabilities which includes learning and development, Customer Support which includes technical support and support services and deployment and Field Services which includes installation and configuration services along with warranty services.

As a whole, the gender makeup of employees in Ireland is diverse, however like with many technology companies the ratio of male to female employees greatly changes when a direct technical department is polled.

The researcher will focus this exploratory study on the Technical Support Services department within the Customer Support arena. This specific department comprises of a ratio of 17:1 male to female employees. This encompasses employees within the department ranging from level one technical engineers, to level four product specialists through to the senior management team.

The company at the centre of this research has been referred to and will continue to be referred to as 'Company X'.

1.8 Interview Participants

Interview participants have been chosen from within the Technical Support Services department in Ireland. The researcher has chosen to interview six females all from different backgrounds and with varying nationalities. With careful consideration it was decided to interview three females with a technical background or tertiary education and three without such history who are working in a considerably technical field.

1.9 Dissertation Structure

This Dissertation will consist of seven core chapters followed by a bibliography and appendix.

Chapter One provides a brief introduction into the proposed research along with context surrounding the importance of the research topic. A profile of both the company and interview participants has been outlined.

Chapter Two provides an analysis of the literature key to Gender Diversity and workforce diversity. This is important as it explains the significance to businesses of having a diverse workforce.

Within Chapter Three the researcher will outline fully the aim and objectives of the research.

Chapter Four will reveal the methodology section which will clearly express the approach taken by the researcher to address the aim and objectives of the Dissertation as laid out in Chapter Three. Inclusive of this chapter is an understanding of why the chosen methodology was suitable for the purpose of this research Dissertation.

Contained in Chapter Five the researcher unveils the key findings uncovered throughout the course of this research Dissertation.

Chapter Six will discuss the findings in relation to the key literature referenced with careful analysis of the relationship.

Chapter Seven allows for the researcher to present the conclusions and will highlight potential areas for valuable future research.

Chapter 2 – Literature Review

2.1 Opening Comments

The following chapter explores the literature surrounding the subject of Gender Diversity and looks at this within the workplace and also within the technology sector. It will also review the perceived influential factors of the advent of gender differences in early child development and personality traits.

2.2 Social Role Theory

Alice Eagly, a professor of psychology, has completed a lot of work in the field of sex differences and leadership styles. Her work has spanned over several decades and has been quite influential to this research in gaining an understanding of how gender inequality and diversity may have been seen over the previous decades.

Eagly presented the Social Role Theory in 1987 which looks at comprehending gender roles and gender differences. Eagly depicts gender roles as “consensual beliefs about the attributes of women and men” (Eagly, 2002) and through observation of behaviours, qualities and values of both men and women a perception of the roles they should perform is acquired based on the perceived ability to undertake the activities required (Eagly, 1987).

According to a plethora of research, from not only Eagly but Bakan (1966) and Broverman et al (1972), different characteristics are considered to be traits of the different sexes. These characteristics are labelled ‘communal’ and ‘agentic’ attributes. The communal attributes would see women as being caring, placid and sensitive in the main, whereas men are more confident, dominant and assertive, displaying agentic attributes. According to Eagly (2000) these perceived characteristics and ‘social roles’ pigeonholed both men and women into categories of “breadwinner” and “homemaker” respectively.

As the social status beliefs saw men as being the more competent of the sexes according to Eagly et al (1994) then as such they are considered to be more valuable than women (Broverman et al 1972). This expectation of gender roles in turn can lead to discrimination and prejudice when people step outside what is seen to be their ‘normal’ role.

2.3 Role Congruity Theory

Eagly develops the Social Role theory further with the Role Congruity theory which looks at the fit along with the perceived appropriateness of gender roles against the perceived attributes required for other job roles such as leadership for instance. Eagly proposes that the perception of leaders is one that holds strong agentic characteristics which is out of sync with the communal characteristics perceived to be held by women. This belief of incongruity is thought to build a prejudice towards women when applying for or enacting these roles which do not appear to society to be a correct fit. This prejudice in turn results in an extremely difficult environment for women to enter or even succeed within in. This could also of course have a cyclical and ever increasing impact on the perception of role incongruity.

It was Eagly's theories that contradict those of other classical theorists such as Esses et Al. (1993) and Allport (1954) who would put forward that inequalities of the treatment of women over men would not be down to the perceived inability of the female sex to carry out specific roles due to characteristic differences. But instead is down to a simple status issue, viewing the social group, in this case of women, as inferior as a whole and society portraying a negative attitude towards this specific demographic for that reason.

Eagly's theories and perspectives deeply tie into the research dissertation which has investigated the specific job roles, which are situated within the GSD department of Company X. As gender role perception should be considered as a potential cause of such low egalitarianism within the industry. The prejudice which is deemed to result from such perceptions as previously discussed may have the potential to cause undesirable views of a career path within the IT industry for women.

2.4 Expectation State Theory

More recently Cecilia Ridgeway (2001) has discussed Berger's 'Expectation States Theory' (Berger et al. 1972) which is quite similar to the Social Role theory we have reviewed. This article reviews the impact that perceived stereotypical gender roles can have on women who step outside their 'expected roles'. Ridgeway has found that this can cause negative implications for such women either by portraying them in a disadvantaged light and unfit for the role or through blinded poor perceptions of their capabilities and performance within the role, which can cause tension and inability to lead well within the role.

These implications could translate to reasons behind any low retention rates of women seen within the technology sector. If women are already at a disadvantage when entering a field such as technology it would seem any career progression would not be met favourably, or as discussed by Ridgeway may in fact be met with such adversity as to cause a migration from the field.

2.5 Erosion of Gender Bias

Although history and previous research tells us of the negativity met by women within these, non-typically feminine roles, new statistics are showing us that not only is a migration of women into these areas badly needed but that change is on the way which will help make the journey easier.

According to Diekmann et al (2004) the phenomenon of social role theory is slowly waning as women take up more employment in positions typically perceived to be male roles and the consensus is positive towards this change. However it would seem that this change will not be achieved easily or overnight.

Nonetheless it does need to be noted, as discussed by Dr. Sam Collins (2015), that women are still relatively new to the workforce in comparison to their counterparts and while the main focus area of this research is on the corporate world, women's integration here is even younger still. This tells us simply that assistance is needed in this area to increase the numbers of women, not only working within the technology area, but to create an increased interest and knowledge about the options available to them within the field.

2.6 Promotion of Diversity

Concurrent with the erosion of 'social roles' an increased promotion of workplace diversity has been seen in recent times. Multitudes of information regarding the benefits of a diverse workforce in driving innovation, reducing the negative aspects of group think and increasing constructive competition can be found on every corner.

According to Tim Griffen (2015), CEO of Dell UK the technology industry is more challenged than others in creating a gender diverse workforce as it is seen as a traditionally male dominated sector. Along with this, the number of female IT professionals has begun to decrease. Dell has recognised the benefits of a diverse workforce and have committed to actively promoting diversity in the workplace.

IBEC (2014) have also voiced their opinion regarding the benefits of gender balance stating studies which link egalitarianism with improved financial performance, innovation, competitiveness and corporate governance and as such are actively promoting gender diversity.

2.7 Women in Technology

Technology is a fast growing industry and as more women are graduating in recent years it is evident that opportunities in this area are being missed. According to Buchmann and Diprete (2013), who conducted a study within the US school system on American students, the number of female graduates had increased to 36% by 2010 and further grew again by 2013 to a point of outpacing men in college enrolment numbers. It does find that these female graduate numbers are low within the STEM fields. The research continues by discussing how women lose interest in the STEM fields at school going age which deters them from pursuing further education in these areas.

From a combination of all of this previous research it can be concluded that social roles, and perceived characteristics of job roles, has had a large impact on gender roles and workplace diversity in the past. Technology as a largely male dominated industry has certainly allowed for this to be the case; however as increasing numbers of women are graduating from tertiary education and are entering the workforce this perception of social roles has begun to erode. Technology, as a growing industry in combination with large FDI in Ireland, is providing a huge opportunity for women to excel but we need to determine and understand what is preventing an influx of women into this field. If we can determine the 'why', we can react, change, promote and grow extensively.

2.8 Gender Differences in Early Development

While there are theories on different social roles men and women are considered to be part of, McIntyre and Edwards (2009) looked at the biological development of sex differences. They found that behavioural differences such as temperament probably occurs in early life but that these small differences in temperament in early life have complex implications when it comes to social interactions, with results that cannot be predicted by existing evolutionary theories.

2.8.1 Parental Influences

According to Goldberg and Lewis (1969), these gender defining social interactions start from an early age. They conducted an observational study of the interaction of parents with their 13 month old infants and found that even at this early stage, the parents treated their children differently depending on their sex. It was found they would reinforce behaviour that was sex-appropriate.

2.8.2 Exposure and Stimuli

Level (1976) also suggests that these gender differences seem to be reinforced by the types of games and toys that children are exposed to as they grow, steering boys towards occupational or career driven skills and girls towards skills better suited to families. A lack of access to technological toys leads to girls being less likely to develop an interest in technology subjects in school (Sanders et al. 1997). Lindsey and Mize (2001) suggested similarly that the choice of activities that parents choose to include their children in at home and through play contributes to the gender-type activities and play they engage in with their peers.

2.8.3 Educational Influences

This gender divide in play has also been evidenced in later life by Gokulsing & Tandrayen-Ragoobur (2014) through a study in Mauritius. They found that girls outperformed men at all levels in education however this didn't translate

to the same job opportunities where the female unemployment rate was higher. They posited that this was as a result of the type of classes available to girls in school which were considered to be more female oriented like education and humanities rather than science and engineering.

2.9 Gender Differences and Personality Traits

A meta-analysis of personality literature by Feingold (1994) found that there were some personality traits which could be attributed to men, some to women and some traits which were gender neutral regardless of age, nationality and education. Men were found to be more assertive and had slightly higher self-esteem, while women were more extraverted, trusting, anxious and far more tender-minded. Traits such as social anxiety, impulsiveness, activity, ideas (e.g., reflectiveness), locus of control, and orderliness were all found to be similar in both men and women. The higher self-esteem and assertiveness in males can also lead to greater risk taking, with Rosen and Peterson (1990) conducting a study into the gender differences which lead to injuries sustained by children during outdoor play in an effort to reduce injuries in boys and girls. Their study found that boys were more likely to take risks which might lead to injury. This predisposition to risk is explored by Morrongiello and Hogg (2004) who found that mothers' reaction to their childrens behaviours differed depending on their gender, when they engaged in risky activities and when they sustained an injury. Mothers were more likely to put in place preventative measures to prevent their daughters being injured, than their sons, as they seemed to believe that not much could be done to prevent boys from being injured.

2.10 Early Adoption of Technology

A study in the US from Madden et al. (2013) found that nine out of ten teens have a computer in their home or have access to one, while three quarters have access to the internet through a mobile device. This is an indication as to how accessible technology is to both boys and girls in the modern era. On top of this they also found that more girls than boys use their phones as their primary device for accessing the internet. As females tend to be more anxious than men as outlined above, this large scale usage of technology could help reduce the barriers to IT and sciences for women. When looking at the adoption of new software or technology in the work place Venkatesh et al. (2000) found that early usage behaviour was key to solidifying this sustained behaviour. Gender differences played a role in this, as male behaviour was based on attitude towards the technology while female behaviour was influenced by their perceived control, suggesting their confidence in ability of the technology to achieve the task with their input was important.

2.11 Time Considerations in the Technology Sector

It would also be beneficial to note the requirements of IT workers regarding hours and flexible shifts. According to a recent survey of Irish employees, 60% of workers are working beyond their contractual hours and doing more than a 40 hour week (RobertWalters.ie, viewed 2015). In the UK these figures are as high as 82% with IT specialists working the third highest hours (Bruce 2013). IT workers also have a much higher propensity for working a flexible schedule, with more than 30% working flexible shifts as opposed to the industry average of approximately 10% (Mellor, 1985). The same survey found that men were more likely to work the flexible shifts than women. Feldman (2002) also tells us that managers show a propensity to work longer hours than their subordinates.

2.12 Gender Differences and Familial Responsibilities

Although there has been a migration of women into the work place it should be acknowledged in some instances that the previous role of the 'housewife' is now unable to be fulfilled full time. So who has taken over this responsibility?

In the US, Bianchi et al (2000) found that while the amount of housework done by women is on the decline they were still doing two thirds of the household chores. These results were echoed in a study of mothers in Canada when Hilbrecht et al (2008) conducted a study as to the implications of work life balance on them. These mothers expressed a preference for teleworking as it allowed them to structure their day around their children's school and leisure time, and the time saved on the commute to and from work was redirected into household chores in line with traditional household gender division of labour.

While this study was carried out on married mothers, in line with traditional gender roles they were the primary care givers within the household and did not engage as to whether this was fair or not. In Europe, policy makers have been putting in place policies to help women meet their familial obligations as well as their work obligations but these policies are considered to be insufficient and do little to help men share the load (Fine-Davis et al, 2004, Crompton et al, 2007).

2.14 Concluding Comments

Although a multitude of research has been conducted into Gender Diversity and the evolution of gender roles, this researcher felt that few attempts had been undertaken to review the perceived reasons behind the current gender gap within the technology sector in Ireland and certainly had not conducted a deep dive research into the reasons this was occurring so notably within Company X.

According to the research reviewed, should this gap be bridged it would allow for positive returns for Company X in terms of financial returns, increased competitiveness and innovation due to egalitarianism within the department.

Chapter 3 – Aims & Objectives

3.1 Research Grounding

In recent years there has been a lot of attention surrounding diversity within the technology sector and many large companies are taking measures to promote a fair and gender diverse work force. The importance of attracting such a diverse workforce is evident in a multitude of articles and has become a key tenant of many companies today. The literature available outlines the positive attributes which can come with such a workforce while at the same time highlights the theories and perspectives surrounding gender based roles and gender differences which may be preventing gender egalitarianism within many business sectors. The scope of literature surrounding gender based roles and differences does not fully delve into the technology sector however American studies of US based schools suggests that women loose interest in the STEM fields at school going age which deters them from perusing further education or careers in this field. The researcher feels the scope of the literature is quite broad and does not address how the Gender Gap could be addressed. With that in mind it is thought that an inductive research approach within the sector, gaining the perspectives and insights in a genuine context would be beneficial. This has influenced the researcher to conduct research into the Gender Gap evident in the technical sector of an Irish based Technology Solutions provider.

3.2 Research Aims & Objectives

The primary aim of this research Dissertation is to explore the potential causes of the Gender Gap recorded in the Global Support and Development department of Company X, with a secondary aim to understand any areas which could influence the reduction of this Gender Gap.

Although the scope of this research is based on a specific technical department within a specific company in Ireland, it is thought the view of the findings could expand to other companies in Ireland also and would certainly provide a good basis to assist other technical companies when tackling the gender diversity issue.

Due to the broad reach of this topic, specific objectives have been set:

1. Uncover if any forces either internally or externally which could contribute to the gender gap evident within the GSD department of Company X
2. Uncover why such a gap might exist and what, if any, macro-environmental forces influence it either positively or negatively
3. Reveal actionable points which may help others to lessen such a gap in the future

These objectives have grown from the overall aim of understanding the causes of the Gender Gap in the technological area of Company X in order to reveal actionable areas which may help to reduce the gap in future.

While the literature suggests that in the main the gender gaps exist due to traditional views on gender roles and gender differences, it is important that with the rapidly changing environment and increasingly progressive views that we understand all factors that influence this gap and what better way to do this than by exploring the perspectives and suggestions of the women immersed in this sector.

3.3 Additional Comments

All mentioned objectives are addressed in a purely exploratory effort. An inductive research approach is taken and has been in no way influenced by any assumed perceptions or biases of the researcher. All objectives have evolved from an interest in better understating the causes of the gender gap specific to a sector of Company X within Ireland and uncovering actionable points to address this. There has been no bias or influence regarding the findings of the research.

Chapter 4 – Methodology

4.1 Introduction

The following chapter will describe the approach taken by the researcher in order to complete the research and meet the desired aim and objectives which was primarily to explore the potential causes of the Gender Gap recorded in the GSD department of Company X, with an aim to understand any areas which could influence the reduction of this Gender Gap.

An explanation will be provided for the reason the methodological approach was chosen above any other, as will an outline of the approach taken to complete the data collection and analysis. Finally the participants' profiles and researchers' adopted interview style will be presented.

4.2 Research Philosophy

Multiple factors were considered and influenced the researchers' decision when choosing the methodological approach for data collection and analysis. The "onion metaphor" as discussed by Saunders, Lewis and Thornhill (2009) presents the process of peeling away layers of factors, much like an onion, in order to reach the most appropriate strategy for the research.

As this step plays such an important role in determining the data obtained, it is vital that the most appropriate method is chosen and as Creswell (1994) has posited, certain problems may be more appropriate for either a qualitative or quantitative approach.

4.2.1 Epistemology

According to Hofer (2004) Epistemology refers to the “origin, nature, limits, methods and justification of human knowledge”. While Saunders et Al (2009) look at how knowledge should be generated and asks what can we refer to as “acceptable” knowledge? When we consider doing a research paper, not only do we need to decide what to research, how to conduct that research but significantly, why are we conducting this research (Remenyi et al. 1998)? Hughes and Sharrock (1997) tell us that there is no “absolute basis for scientific knowledge”, suggesting that there are a number of ways of conducting ones research. In an effort to address this concern, Gordon (1991) posits out that we do not aim to reach an absolute answer but to aim for findings which are in context of the world and help us to build on our general understanding of the world. This researcher believes that people and social interactions are in a constant state of flux, in line with a subjectivist view of the world (Bryman 2008:19) and as such has structured this research so as not to find an absolute solution to the problem covered by this paper but to better understand a complex social climate.

The method in which one chooses to conduct research is linked to the way one views the world (Bryman 2008) and either qualitative or quantitative methods should be weighed up to see which is more suited to the research problem at hand (Creswell 1994). Saunders et al (2009) compares two approaches to research with the emphasis on deduction or induction. With a deductive approach the theory comes before the observation, while induction results in the formation of a theory based on observation. The researcher has approached this paper with an open mind to the results of the interviews and is engaging in an explorative approach to the problem at hand so as not to bias the results with a predefined theory.

4.3 Quantitative Research

According to Saunders et al (2012) a quantitative approaches to research examines the relationships between variables, it puts an emphasis on numerical measures and is statistically focused. This approach does not allow for obtaining in-depth perceptions from participants or to further probe interesting areas as they are uncovered.

The quantitative approach, through the use of methods such as surveys and questionnaires, can be useful for gathering facts and figures and moves from a theory to the data to prove it. It has been determined that for the purpose of this dissertation, participant perceptions and beliefs were required with elaborate responses and as such a quantitative research method would not be suitable.

4.4 Qualitative Research

According to Saunders et al (2012) the qualitative methodological approach to research looks at the participants' perceptions and meanings and studies the relationship that might exist. It is also considered that the research may build a rapport with the participant and may allow for the evolution of the questions throughout the process. Bryman (2008) believes qualitative research can be "inductivist, constructionist and interpretivist", but also acknowledges it does not necessarily need to be all three.

Qualitative research as opposed to quantitative does not begin with a theory for which it would like to uncover the data to confirm. Instead it can look to understand a more complex environment or phenomena. Tools such as interviews and focus groups can be utilised to accomplish this deeper insight from the participants.

According to Gordon (1991) research findings should not be seen as a definite certainty and instead should be presented as accurate in the context they are presented in. The evidence gathered is simply steps to help in our "cognition of the world" (Gordon 1991: 604). While Hughes and Sharrock (1997: 162-163) believe there is no absolute basis for scientific knowledge and as such one theory cannot be determined as more valid over another. In accordance to this belief, the intent of this researcher is to obtain a better understanding of the perceived causes of the Gender Gap in the GSD department of Company X which may contribute to uncovering areas which may be actionable to assist in reducing this gap in the future. As such it is felt a qualitative approach to research is best suited for this dissertation.

4.4.1 Qualitative Research Rationale

The researcher chose a qualitative research methodological approach for the purpose of this dissertation. This was decided after careful consideration of all other options.

A mixed approach using both questionnaires and interviews had also been deliberated as has been suggested to be useful by the likes of Patton (1990) however as per Creswell (1994) it was believed by the researcher that either a quantitative or qualitative methodology would be better suited to certain problems.

To investigate the problem at hand, it was the researchers' intention to observe and explore the perception behind a particular phenomenon and as such it is believed a Qualitative approach in which a select sample group is interviewed to gain insight into their perceptions and beliefs on the specific problem and its surrounding environment was better suited to the problem.

4.4.2 Alternative Considerations

As mentioned previously, other research avenues were considered thoroughly prior to determining a qualitative methodological approach with in-depth interviews would be the best course of action for the research question at hand.

A mixed method approach had been carefully contemplated, utilising surveys initially to collect data on numbers and an overview of expectations which might then lead into areas which would be beneficial to conduct interviews to elaborate on. The researcher ultimately felt however that the surveys would not contribute at the same level to the research as in-depth interviews with a specific sample group would and that there may not be the same level of real honesty and real-life perceptions gained with this approach. This along with the time constraints involved led the researcher to believe the best approach for this research dissertation.

4.5 Interviews

The researcher opted to hold exploratory interviews with six female employees within the GSD department of Company X as a primary source of data collection. The form of interview chosen by the researcher was that of a non-standardised, one to one, face to face interview as according to Saunders et al. (2009).

All participants were randomly chosen in order to prevent bias while also purposefully chosen to ensure a mixture of female candidates with both a technical and a non-technical background or tertiary education. This was achieved through the utilisation of a pre-existing network of female employees who offered assistance to the researcher in terms of the time of their members to participate in the interviews.

This qualitative interview process was chosen as it was felt it would provide in-depth accounts, perceptions and experiences of those women involved in the technological department of Company X.

4.6 Sampling

A multi method approach was taken in regards to sampling. The researcher sought to obtain a random sample group ensuring there was no bias but also wished to have a mixed perspective of participants with both a technical and non-technical background.

A pre-built audience existed which was beneficial for the purpose of the research. Within Company X a Womens' Network had been setup as part of the employees' resource groups. Its members consist of female employees from the GSD department of Company X globally. The researcher was granted time during one of the groups bi-monthly meetings to present the proposed research and request assistance in terms of participants for in-depth surveys. The researcher obtained the contact details, along with an acknowledgement if they held a technical background or not, for seventeen volunteers as a result of this meeting.

From this group of volunteers, purposive sampling was employed to reduce this group to a list of ten participants, five of whom acknowledged a technical background, five of whom did not. This purposive sampling was completed by choosing the first five technical and first five non-technical volunteers.

Given all participants were females employed in the technical GSD department of Company X in Ireland, it is unsurprising that they were conversant in terms of women and the Gender Gap within the technology sector in Ireland and as such were appropriate participants for this purposive sampling.

4.7 Initial Proposal

The initial proposal for this research dissertation was to examine the wider technology sector in Ireland to determine a number of factors. The researcher intended to firstly, explore if a gap existed at all levels of employment within the IT sector in Ireland, then to attempt to uncover why this gap was evident and if any macro-environmental forces may contribute to it and lastly reveal actionable areas to address this gap.

Upon further research and consideration it was determined a better approach would be to focus on a company who is specifically aware of this issue, acknowledges it is evident at all levels of the technical organisation and would like to take action to understand and address it. It was determined the focus of the research would be on the Irish GSD department of Company X which could be seen as a microcosm of Company X globally. As such findings could relate to the wider GSD departments in Company X but could be considered for the technology sector in Ireland also.

An initial thought was to combine both questionnaires and interviews spanning all departments both technical and non-technical and including male and female participant however this approach has evolved and the formation of a more in-depth approach was garnered as discussed throughout this chapter.

4.8 Sample Group

The sample group was composed of six interview participants all of whom are working within the GSD technical department of Company X. The participating company, referred to throughout as Company X is a large American multi-national Technology Solutions Company who employs approximately 120,000 people globally with many more indirectly employed through partners. The company's EMEA headquarters are located in Dublin with approximately 2,300 people currently directly employed. From its Irish offices this company provides various services such as sales, financial services, learning and development, technical support, product installation and configuration services and warranty services to name a few.

The GSD department, where all interviewees currently work, has a very different ratio of male to female employees in comparison to other areas of the business. At the time of writing this dissertation there is on average only 16% of the total employees in the GSD department across all levels of positions in EMEA who are female. As such this has been the focus of the dissertation.

The researcher chose to interview six females all from different backgrounds and with varying nationalities who worked in the GSD department of Company X. All participants are Irish residents working out of the companies Dublin offices. The Dublin offices of Company X are the base of its EMEA headquarters. While the scope of this research focused on the Irish offices this could be seen as a microcosm of Company X in EMEA, APJ and ABU and as such this research could be considered for Company X globally.

With careful consideration it was decided to interview a mixture of employees with both a technical background or tertiary education and those without such history who, due to the area of the business they work in are all involved in quite technical roles within the company.

The researcher uncovered as the interviews were underway that a level of repetition could be found between the interviews and that by the sixth interview sufficient data had been gathered for analysis. As such it was

decided that the six interviews were adequate to provide the exploratory data required for the purpose of this research.

Candidate	Age	Gender	Nationality	Tertiary Education Achieved	Technical Education	Length of Service at 'Company X'
A	28-30	Female	Irish	Yes	Yes	<5 Years
B	28-30	Female	South-African	Yes	No	<5 Years
C	30-35	Female	Irish	Yes	Yes	>5 Years
D	35-40	Female	Venezuelan	Yes	No	>15 Years
E	35-40	Female	Irish	Yes	No	>15 Years
F	30-35	Female	Irish	Yes	Yes	>10 Years

4.9 Interview Style

All interviews were exploratory in nature and conducted in a semi-structured manner which allowed the interviewer to expand on certain areas as were deemed necessary or interesting at the time. The researcher had an “interview guide” (Bryman, 2012) or area of questions that would be beneficial to investigate in relation to the research. The researcher also wished to prevent any leading of the interviewee and to remain as open and adaptable as possible while ensuring the interview did not veer completely off topic. This is in-line with the characteristics of a semi-structured approach as outlined by Bryman (2012).

All of the six interviews were completed face to face utilising the companies’ offices and meeting software to record the interviews for the purpose of later transcription. During all interviews the researcher was conscious of the criteria mentioned by Bryman (2012) to a successful interviewer and therefore aimed to be clear, sensitive and balanced while being ethically sensitive.

4.10 Interview Themes

The interviews were conducted in an exploratory manner and the researcher allowed for questions to evolve based on the flow of the interview or as certain interesting topics emerged. The interview guide did however lead the researcher to cover specific themes as deemed necessary to address the aim and objectives of the dissertation. These themes explored were the participants' education, influencers of career decision, perceived cause of the Gender Gap in technology and perceived approach to reduce the gap.

The applicable literature heavily maintains the importance and benefits to businesses of having a diverse workforce in terms of gender as well as culture, backgrounds, talents and so on. However diversity in terms of gender is still inconceivably low in technology departments across businesses and no clear strategies from a real-life context of an Irish sector have been uncovered.

With this in mind each interview sought to gain insight into the perceptions of the candidates towards why a Gender Gap in the GSD department existed. While there is a large volume of theoretical work perspectives regarding gender diversity across a variety of employment sectors, the researcher still deemed the topic of interest and felt obtaining such insight into the perceptions of professionals immersed in this area would not only be of benefit to the company who is the focus of this dissertation but would also prove worthy inclusion in academic work.

The interview guide along with all interviews can be found within the appendix for reference as needed.

4.11 Data Collection

All interviews were conducted in person and lasted approximately 25 minutes each. All interviews were held on company premises in purpose designed meeting rooms which contained meeting recording equipment. This equipment was utilised for the purpose of the interviews and the recordings were stored on secured storage spaced owned, maintained and managed by Company X. Consideration was taken by the researcher to ensure all equipment was functioning correctly prior to the interviews. The recording of the interviews allowed the researcher to abstain from note taking which was felt could prove disruptive to the participants but also allowed the researcher the benefit of listening back on the recordings several times to analyse and transcribe. During transcription the interviews were coded to protect the participant anonymity along with all companies mentioned throughout the interviews.

The interviews were exploratory in nature and conducted in a semi-structured manner using open-ended questions. This open-ended questioning style was in-line with the characteristics of a semi-structured approach as outlined by Bryman (2012), allowing for elaboration from the participants and to obtain a more free expression of their thought, according to Bogdan and Biklen (1997), while the semi-structured manner allowed the interviewer to expand on certain areas as were deemed necessary or interesting at the time.

The researcher while keeping the interview semi-structured used an “interview guide” (Bryman, 2012) as a basis for questioning to keep track of the overall questions that were needed in terms of the aims and objectives laid out. This interview guide contained an overarching set of questions for both technical and non-technical participants however different areas were then explored for technical participants as opposed to non-technical participants such as:

“What do you think influenced your decision to choose a technical course to attend in college?”

As opposed to a question for a non-technical participant such as:

“Did you ever consider any of the STEM fields as an option for studying in college?”

4.12 Data Analysis

All interviews were recorded which ensured all data was collected and also had an added benefit to the researcher later on during the data analysis phase. In having the recordings it allowed the researcher to repeatedly listen to the participants' interviews and understand their point of view and beliefs. Each recording was transcribed post interview which allowed for easier analysis of the conversations and data received.

The data analysis method embarked on by the researcher was not unlike the Thematic Analysis approach as described by Marshall and Rossman (1999). As described further below the data was firstly organised, followed by generating themes, the data was coded, understood and lastly the data analysis was composed.

Once transcribed, the researcher examined each interview and began by highlighting different areas of interest and making handwritten notes along the margins linking the data back to the research question and aims and objectives where applicable. Notes were also made in regards to data that seemed of interest however may not have directly linked back to the research question. Upon the next iteration of analysis, the researcher labelled the notes and colour coded the sections based on different areas such as family, exposure to technology and technical subjects in school. It should be noted that mental notes had been made throughout the interviews and while listening to the recordings therefore the researcher had an idea of the trends that would be found. Each trend was highlighted differently to keep track of each different train of thought. This process was reiterated several times to ensure no data was overlooked. Once completed the researcher separated the data and grouped all passages which appeared to be closely related and labelled these again accordingly. Unsurprisingly the interviews contained a lot of data and as such, data reduction and organisation was an important step that occurred. Any groupings which were not of interest or addressing the research question, aims or objectives were disregarded and themes and discussion points emerged from the remaining groupings.

The researcher at this point took careful consideration to remove any identifiable names from the interviews, both in terms of participants and company names mentioned throughout the interviews.

Once completed the researcher organised the data and trends into recurrent themes and cross referenced these themes with the aims and objective of the dissertation question along with the relevant literature review and composed the data analysis accordingly.

4.13 Participant and Company Anonymity

Both the participating company and contributing participants requested anonymity where possible. As such the researcher has taken careful consideration to code any information or identifiable features of either the company or participants throughout this research. Careful consideration has also been made to code the names of other companies mentioned throughout the interviews.

All interviews were conducted on company premises and were recorded using secure meeting recording software provided by the company. All recordings were safely and securely held on company storage space to be safely disposed of at a later time.

All interviewees have been coded as participant “A – F” and the company referred to as “Company X” throughout the course of this documentation to protect their anonymity.

4.14 Ethics Considerations & Trust Issues

The researcher took careful considerations at all times to strictly adhere to the ethical guidelines as dictated by National College of Ireland. The researcher ensured the participants were chosen fairly through a random pick of names utilising a pre-existent women's network within the GSD department of Company X however purpose was used to obtain a mix of participants with both a technical and non-technical background.

It should be noted that some of the participants and the researcher were previously acquainted with each other through their formal work relationships and the pre-existent women's' network within the GSD department.

All participants willingly participated in the interviews and clearly understood the proposed research topic. It was concisely agreed by both the participants and the researcher that all data obtained would be for the sole use of this research paper.

While voice recording software available through Company X was utilised by the researcher, it was clearly agreed with the participants and Company X that the recordings would be used for the purpose of transcription only. All recordings were stored on a secure server owned and managed by Company X. It was agreed that the recordings would be held for a period of 1 year after which the data would be securely wiped using company data destruction software.

In order to build trust and reassure all participants, only agreed upon information would be included, the researcher offered to provide a copy of the completed Dissertation to all interviewees. This was accepted by all participants.

4.15 Research Limitations & Considerations

The researcher specifically chose to conduct this research focusing on the Gender Gap within the GSD department of Company X. This limitation should be noted when considering the extent of the findings. By narrowing the scope it is anticipated that this research will provide insight into the perceived causes of this gap which could be extended and applied to the wider organisation and also to the technical sector in Ireland.

Initially it was the researchers' intent to source participants from several different sectors of the company within Ireland along with a mixture of male and female participants. This however was not feasible due to time constraints. Nonetheless, it is believed that the experience of the participants involved has established an assorted base for the research.

Information discussed regarding the Gender Gap in the technology sector by the participants began to appear slightly repetitive in nature. As such the researcher determined that the six interviews completed provided sufficient data for the purpose of this dissertation.

While all participants were females employed within the GSD department of Company X in Ireland, the researcher felt that overall there was still a sufficient variety in terms of nationality, technical education and technical experience of the participants interviewed. This ensured a rounded insight into the perceptions of women as to the Gender Gap existent in the GSD department of Company X and the technology sector in general in Ireland.

Chapter 5 – Findings

5.1 Presentation of Key Findings

This chapter will present to the reader the key findings from the accumulation of all six interviews conducted by the researcher for the purpose of this dissertation. The findings will be presented in a grouped structure based on specific thematic headings uncovered and the questions addressed to specifically answer the research questions, aims and objectives which were accomplished during the data analysis phase of research, as outlined above. The researcher would like to raise awareness at this point that the information to follow has been provided by the participants during the interview sessions. It is in no way the researchers intention to imply that Company X is not active in its approach to gender diversity or that there are not initiatives to actively tackle this issue which are not mentioned by the participants throughout the interviews and therefore included in these findings.

As described within the Aims and Objectives as laid out earlier in the paper it was the researcher's intention to primarily explore the potential causes of the Gender Gap within the GSD department of Company X with a secondary aim to understand any areas that could influence the reduction of such a Gender Gap within the Technology Sector going forward. These main aims along with the objectives laid out within Chapter 3 were explored within the interviews utilising the interview guide as per the appendix.

Three distinct themes were uncovered throughout all interviews along with areas on specifically addressing the perception of the cause and how to resolve the Gender Gap. These were the Education and Background of the participants, the Exposure to Technology in early life, Psychological and Gender Differences, believed Causes of the Gender Gap and believed ways to reduce the Gender Gap in Technology.

5.2 Theme 1 – Education and Background

The researcher used the interview guide to assist with a general flow of questioning. All interviews began with simple opening questions to put each participant at ease but which also contained an underlying motive which was to understand the background and upbringing of each individual participant. This question was *“Could you tell me about yourself, where you grew up and went to school?”* Along with a question regarding their family life; *“Are you from a large family?”*

It was found that all participants were of varying familial settings, nationalities and had quite different educational upbringings during their early schooling life also.

Participant A, an Irish born Technical Resolution Manager for Company X, stated she was the youngest of 5 siblings and is from a large Irish family consisting of *“three girls, two boys”*. This participant attended an all-girls school in Wicklow Town and later commuted to college in Dublin city centre attending a technical course that was *“male dominated”*. Participant A, when referring to the subjects available to study during her school life stated *“they were oriented towards girls... or I suppose what they thought girls should do.”... “you had your Home Economics classes and all of that”... “I don’t think it really gives people, girls, a full... you know... exposure to what they can do”*.

Participant B was born in and attended school and college in South Africa. She is from a small family with one older brother. This participant attended college in *“North-West”* to study a degree in consumer Science. The school attended was of mixed gender however according to the participant the different sexes were kept segregated as were the subjects available to them during the early years of high-school. When referring to the subject available to females in the school she attended participant B stated it was more *“biological or a more science driven field rather than technology”... “mathematics and science and biology”... with “home economics would have been my major subjects in high school”*. The participant refers to the belief that the subjects chosen were a *“package a lot of females would have*

chosen”... it “would be I think gender driven”.

In the participant’s opinion, the lack of technology driven subjects was perhaps due to cultural reasons in school; *“certain fields would have been more technology driven... I think you just stay away from it because I think definitely where I’m from it had a gender... link to it.”* This was backed up by the participants memory of her earlier years in school: *“my first years of high school it was compulsory for all girls to have typing as a subject and for all boys to have wood-work as a subject ” “it’s definitely I think a culture thing”.*

Participant C is the eldest in a family of four girls, born in Dublin and grew up in Westmeath from the age of twelve returning to Dublin to attend College studying a both a technical Bachelor of Science Degree and Masters. This participant attended mixed gender schools at all levels and while she states the same subjects were available for both girls and boys to choose it was noted that *“more like girls would stick to what were seen as more feminine subjects and likewise for boys”.* This is backed up by the participant’s statement *“For classes in school like technical graphics, agricultural science and home economics there was a gender attendance”* Interestingly participant C noted that in her opinion of school attendance during her time there *“kids would be less inclined to step outside the norm so even though a subject might interest them”... “they are going to stay away from it ”* when referring to how she became interested in technology, participant C attributed this to her parents and school purchasing a computer and the praise that came with this as she understood how to use certain applications.

Participant D from a large family of all female siblings was from Venezuela where she attended a mixed gender school up to the completion of High-School. She then moved to Texas at the age of seventeen where she completed a non-technical Degree in Economics. Participant D did not recall any real disparity between the subjects available to girls and boys during school, it was noted that the interest in subject varied between the genders but this was accounted as *“normal”* behaviour by the participant.

Participant E was from a large Irish family, the second eldest, the only girl with three brothers. She attended school and college in both Bray and Dublin where she completed a Diploma in business and also an IT training course. The IT training course was referred to as *“more of an enhancement for a CV for an administrative job”*.

The school attended was an all-girls school and it was noted when asked about technology related subjects in school that *“there wasn’t any that were available in school at that time, it was more the usual maths, biology, home economics, languages and those types of subjects”*. Participant E when asked advised her siblings were not interested in technology growing up either *“My brothers wouldn’t be game players or anything like that”*.

Lastly Participant F was from a large family born in Athlone, attended an all-girls convent and then Carlow IT where she studied a degree in IT. Her secondary school from transition year provided an IT class which according to the participant *“was an opening of the door, I would describe it as that, and from there the interest grew”*.

From the six interviews completed the researcher found no obvious link between the participants’ family size or gender makeup and their decision to choose a technical or non-technical field of study or career. The researcher did however deem that the technical participants’ had more of an influence during early life either from family or school towards technology and this could potentially be considered a reason as to why they levitated towards a technical career and education above the participants who did not follow this path.

5.3 Theme 2 – Exposure

A second theme emerged throughout the interviews. This was the varying levels of exposure of individual participants towards technology during their early life. This area was initially raised by participant A and was not an area that was explored as a part of the interview guide as such the guide was adapted accordingly for participants who did not naturally discuss this area. The question was asked *“Do you feel there was an exposure in school or at home to technology from an early age?”*

Participant A, who actively pursued a technical education and technical career, stated she was *“interested in technology because I was always around it”* that there *“was always some new gadget to play with”* at home as a result of her family’s interests *“My Dad and my brothers”* they wanted to *“keep on top of the latest technology”*. This participant goes on to say she believes it is *“A lot to do with what you are exposed to as a kid”* referring to how ones interests are developed. Participant A believes that *“There should be all the options in girls’ schools that there are in boys”*. Interestingly, there was a mention to differences between this participant and her school friends who she feels were not exposed to technology *“my school friends, you could see the difference then even, maybe they weren’t surrounded with technology at home and sure they could hardly turn on a computer”*. Exposure to technology at a school level was poor according to the participant which she believes contributes to the low volume of women entering the technology field of study.

Participant B quite in contrast to participant A did not pursue a career in the technology however through other roles has now come to work in the field. This participant quite evidently had lower exposure to technology than participant A, advising that *“being from South Africa we only got a computer... em in my early teens”* and that her family *“probably only had internet... when I went to university”* as *“internet wasn’t as freely available as it was, would be now”*. Participant B backed this up by saying *“you wouldn’t have that exposure to em the technology as such”*. Although in her earlier life did not expose her to technology her role within the GSD department has done just

that and it seems she has grasped the opportunity *“I had to up skill myself very quickly to be able to do the job that was needed”*. Based on the knowledge of this developed skillset and the exposure she has had to technology in the new role, the participant was asked would she reconsider the technology as a field of study should she return now, to which she responded *“Definitely”*.

Participant C like participant A pursued a technical field of study and career and made mention to her exposure to technology growing up and the compliments she received for knowing how to use the technology available to her; *“we got a computer into the classroom in 1999. We had gotten one at home the previous Christmas so I knew some things about paint and word – the big apps back then... When we got the computer in school I was able to show off all my skills and got a lot of praise for it”*. It was acknowledged that this exposure was what brought on an interest for technology *“I was lucky in that my parents got a computer and then the school which sparked my interest”*.

Participant D who did not pursue a technical field of study or career but has developed into a technical role has suggested that there was a level of exposure to technology available to her growing up. When asked if she grew up around technology she advised the latest technology would have been in her house growing up but it was not an interest of hers, the same was said for availability of technology based subjects in school.

Quite interestingly this participant has two children, a boy and a girl with less than an eighteen month age gap between them, who she believes have had the same levels of exposure to technology but with very different interests in technology itself. It is acknowledged that there is a lot of technology in the home as both the participant and her husband work in technical roles. It was stated *“I can see that my son from a very early age was really into it and enjoyed it. He knew about IP since he was six years of age and manages a server, a virtual one at that since he was 8 or 9. Where our girl would just go on it every now and then to play a game but she’s just not into it that much”* and *“I’d like to think I haven’t done anything in the way I have raised my children, I mean they are both equally exposed, they both each have their*

own system that they can go into. So I hope it's not something that I have done".

Participant E, who again developed into a technical role without studying or pursuing this field, did not refer to a lot of exposure to technology in early life. In school and at home this did not seem to be something that was available. When directly asked if she thought she had been exposed to technology the response was simply "No". Although an IT training course was completed it was stated this was *"more of an enhancement for a CV for an administrative job"*.

Through her exposure to technology within her role of employment this participant would reconsider technology as a field of study and is in fact exploring the possibility of attending college and studying this area; *"I have actually looked into doing a masters. It will be in IT and business"... "getting to work with IT departments on a daily basis...I really developed an aptitude to want to learn more and continue to progress career in the IT part of the business"*.

Participant F actively pursued a technical career as when she was leaving school this was *"seen as a market area"... "IT was definitely a growing field"*. As previously mentioned this participant acknowledged a technology based subject was available to students from transition year only, this could be seen as a contributor to her interest in pursuing this field as a career. There was no exposure of technology from any other area of this participant's life. When asked if she was exposed to technology through her family the participant confidently answered, *"Absolutely not, no"*.

5.3 Theme 3 – Gender Differences

Some participants touched on areas of perceived gender or psychological differences throughout their interviews. This was a theme that could be seen especially prominently in participant D's interview.

Participant D has confirmed that there were the same subjects available to both male and female genders in school growing up. However according to the participant *"There were differences in the subjects different genders were interested in, but I think that is normal"*. When asked about exposure to technology at home, the participant again acknowledged that this was something that was available to her however *"it wasn't something I would have really been interested in"... "it wouldn't have been something I would have immersed myself in... not like my son [name removed] does now anyhow"*.

This participant gave examples of the gender differences between her two children, her son has a great interest in technology whereas her daughter it is stated *"she'd be more like me. She'd be more into design"*.

Similarly participant B has referred to her childhood with her brother and how the computer that was bought was intended for her brother to use rather than herself. When asked about school subjects this participant stated there was *"a package a lot of females would have chosen kind of going the home economics route... em you know sewing, food and nutrition and biology, would be I think gender driven"*.

According to this participant there seemed to be a strong perception of appropriate gender roles; *"like we had computer studies or you know accounting packages on some certain fields would have been more technology driven... I think you just stay away from it because I think definitely where I'm from it had a gender... link to it"*.

This theme was touched on by participant C also, it was stated that *"Technical jobs are seen as male oriented roles"*. This participant did not see a difference in the subject available to boys and girls in school growing up but did state that *"girls would stick to what were seen as more feminine subjects and likewise for boys. So there did seem to be a split in that regards"*. And that

“some kids would be less inclined to step outside the norm so even though a subject might interest them, like a technology based subject, if it’s not seen as kind of normal as such to take that class then they are going to stay away from it”.

Participant E also alluded to psychological differences when discussing the lack of exposure to technology growing up. It was stated that her *“brothers wouldn’t be game players or anything like that”* however it was not considered she herself could have been a ‘gamer’.

Participant F made a passing reference to psychological differences also in that; *“I think it’s perceived just as more a male industry, but it’s not the only one. Architecture, engineering they’re all the same”*. Like participant C this participant has two children, a girl and a boy, they are two young at this point to see their personality differences however it was noted that *“my little girl, who’s 2, can already tell us the server is broken when her Elsa isn’t on”...“that’s the world we live in”*.

5.4 Addressing the Cause

The interview guide allowed for a direct question regarding the believed cause of the Gender Gap both within the technological GSD department of Company X and also the technology sector in general in Ireland. Although this was directly asked it was also interweaved throughout the interviews by all participants and the accumulation of this is laid out below.

5.4.1 Perceived Causes within Company X

The requirements of working within the technical GSD department of Company X were discussed. Participant D felt the nature of some of the roles could in itself act as deterrents for women stating that being a 24/7 operation *“even if it were a customer care job or any other job, I think the shifts itself would be less attractive to women. I suppose the fact that it’s technical just makes it less attractive”*.

Participant B however felt there was a lack of communication and as such misconception surrounding what the jobs actually entailed and what the requirements of successful candidates would be. Participant E backed up this theory stating there is *“a lack of understanding of the environment we work in. A lack of understanding as to what is required in the IT space”*.

Participant F felt that Company X does not promote the flexibility it provides to employees and that this could prohibit some women from entering the technical department, as she feels that in general these types of roles are highly demanding with a requirement to be on call out of hours. She feels that Company X have a better work-life balance than any other company she has worked for but their lack of promotion of this could be preventing women from developing interests to join.

5.4.2 Perceived Causes within the Technology Sector in Ireland

The perceived causes of few women entering the technology sector in Ireland have been broken into sections below based on the information received throughout the interview process. Some of these perceived causes link back to the above themes that emerged through the interview analysis.

5.4.2.1 Education

The educational system seemed to be a perceived factor towards the cause of so few women entering the technology sector within Ireland. This seems to stem from as early as primary and secondary school due to the lack of technology related subjects according to the participants.

Participant A believes *“you just don’t have the workforce of educated women, in this area”* and that there are few women interested in taking courses that lead into IT therefore *“how can you expect that to translate to an even number across the board? There has to be a gap”*. This participant believes school subjects *“were oriented towards girls... or I suppose what they thought girls should do”*. While participant B also states her school subjects were *“biological or a more science driven field rather than technology”* and participant C maintains that *“the classes, courses, careers are seen as gender orientated”*.

Participant C also felt there was a lack of support when it came to discovering what careers were available to her *“I really had no idea what else I wanted to do – I wasn’t the most academic person in school, quite average grades, the guidance counsellor was useless”*

5.4.2.1.1 Exposure

A lack of exposure to technology during early life was another factor that was perceived to be a cause of the Gender Gap.

Participant A feels a difference can be seen between her and her peers from school who were not exposed to technology as she was. She feels this exposure was not received at school however she was lucky to have received it at home unlike her peers; *“my school friends, you could see the difference then even, maybe they weren’t surrounded with technology at home and sure they could hardly turn on a computer”* She believes the lack of exposure of children to technology in school is preventing an influence that could *“open them up to areas that they could take as a career path”*.

Participant B also felt in school *“you wouldn’t have that exposure to em the technology as such”* and that this lack of exposure *“obviously drove me not to have that kind of... em openness to other fields as well”*.

5.4.2.2 Perceptions

Several participants felt that an incorrect perception of the sector was a factor causing fewer women to choose the technology field of study or career.

Participant F thinks it is *“perceived just as more a male industry”* while participant C believes *“computers ‘scare’ people”* and that a perception exists that those within the technology sector must be *“computer geniuses who play video games and are nerds”* and that this *“turns a lot of girls off from going down that route”* as *“women don’t think they will fit”*. This participant feels it is incorrect but *“People think that you need to be extremely intelligent to work in IT or with computers or technology”*.

5.4.2.3 Culture

Another perceived factor which has quite clearly been noted throughout the interviews is culture.

Participant A refers to cultural perceptions that *“said women do X and men do Y... so schools take that and say well then we’ll teach women how to do X”* and that culture dictates *“conventional jobs for men and women”*. Likewise, participant B believes there were cultural forces which set standards for educational and career pursuits; *“it’s expected of a girl... which is a gender to have a certain subject because of the gender not because of the interests, so there’s definitely a push into the direction you had to take”* and when referring to choosing subjects it was stated *“you just stay a away from it because I think definitely where I’m from it had a gender... link to it”*. This participant does believe this cultural force is evolving *“but I think we’re still a long way off breaking down those walls”*.

Participant F felt that in general technology roles are highly demanding stating *“It can be a very full on position, Company X is the only place where I haven’t*

been phoned out of hours". This participant felt this makes it harder for women to work in the industry especially when it came to looking after a family also. Again, this could be seen as a cultural factor as it is the woman who is perceived as the person who looks after the family. *"it's harder than for a female in that business, because it's not possible to be 24x7 or else your husband is at home, but then you've a bigger point there."*

Participant C like participant B and A feels *"Technical jobs are seen a male oriented roles"* and also feels that culture edicts certain normal subjects for different genders to take in school and this can have a negative impact on some children; *"some kids would be less inclined to step outside the norm so even though a subject might interest them, like a technology based subject, if it's no seen as kind of normal as such to take that class then they are going to stay away from it"*. This participant believes *"the main factor in this is Socio-Cultural"*

5.4.2.4 Gender Differences

Gender differences when it comes to interests and personalities are the final factor that has been noted as a perceived cause of the Gender Gap in the technology sector in Ireland. It is believed by some participants that the gap may be evident simply as a result of women's lack of interest in technology.

Participant D has clearly stated she did not pursue a career or education in technology purely due to her lack of interest in the area. She feels her daughter has this same lack of interest and that they have more artistic minds. However her son she feels is very interested in this area and will likely pursue this as a career *"I don't know if it's just their personalities or if it has to do with their gender"*. She stated *"There were differences in the subjects different genders were interested in, but I think that is normal"*

Participant B also mentions the possibility that this could be the simple cause of the Gender Gap to some extent, stating *"it could be just personal interests that males would be more interested in the type of role"..."or maybe it could*

be em the way people are raised to be” and refers to women’s interests that “I don’t know if there is an interest... from an earlier on age to be interested in technology”.

5.5 Actionable Areas – How to bring about change

All participants were asked in their opinion as females working in the technical arena, what could be done to lessen the Gender Gap going forward. Several different areas were discussed in this regards and have been laid out below.

5.5.1 Exposure

Several participants mentioned the lack of exposure as children to technology as being a potential deterrent of women entering this arena. As such an increase of this exposure should help to lessen the gap of women pursuing technology as a field of study. Participant E thinks there should be a “*much bigger presence and understanding of it through secondary school*” while participant A thinks there has to be a focus on the children. Most participants made mention to this area being under development at this time and believe there will be a change down the road thanks to so much technology awareness with smart gadgets and whiteboards being used in schools and as participant A has pointed out the “*likes of coder dojo and IT is not just for geeks*” bringing that extra exposure and encouragement to children.

5.5.2 Education

Education was a component most participants felt was important to lessening the Gender Gap in technology. Participant A stated “*You can’t narrow the gap if there’s not the talent there*” referring to the lack of women choosing a technology related subject as a field of study. Participant B thinks children are influenced from an early age as to what path they will take and due to the subjects they choose in school and as such their options may be reduced if you do not have exposure to certain subjects at an early age and participant C thinks promotion “*this needs to start in secondary school when pupils are trying to decide on their choice of college/course*”. Participant E would be in agreement with this, saying “*there should be a subject that would open people’s eyes up, even if it was brought in at a fifth and sixth year level*”. Participant F who took an IT subject in secondary school thinks that there were not enough hours spent on this compared to the time spent in school and would suggest this is increased.

The general consensus on this is that education of children needs to play a large part in showing them what opportunities are available to them and provide an exposure to technical subjects at an early age.

Participant A sums this up well by saying *“You have to work on education on making sure kids have all the options and then there’ll be change. You’ll see the gap... naturally narrow”*.

5.5.3 Culture

Some participants also felt that *“culture I suppose is tied to that”* (Participant A). It was felt that cultures saw different roles suitable for different genders and the same could be said on their view of the suitability of different subjects for different genders. Participant A believes *“if we can have a culture that doesn’t have the as I said conventional way of seeing careers for boys and girls and if we have the educational system to back it up then we should see the difference”*. Participant B does feel that the cultural perception of gender specific roles is changing and breaking down this *“stigma”* will help.

5.5.4 Role Perception

It was believed also that a review of how roles are being perceived needs to be addressed and this may open up more women to enter the field if they understand the reality of the field and roles. Participant B believes there is a requirement to break down *“the diversity barriers across what the role entails”* and *“promoting what a role is and not promoting female diversity in that role more so what the role is and what skills are needed for that role”*.

Participant C concurs with this stating there is a need for *“more awareness of the courses that are available and the various career prospects that come from it”*. She believes this can be achieved through a current program she is involved in which would see employees going *“out to students and show the different types of careers they can have with their technical degrees”*

5.5.6 Quotas

The usage of quotas was broached with some participants, all of whom were agreeable that this should not be the way to reduce the Gender Gap in the

technology sector. Participant A stated “ It should be the best person for the job” while participant B expressed that *“it shouldn’t be you’re a female, and now you’re bringing diversity”* and participant C conveyed that companies *“should consciously try to recruit women as equally as they do men but having a quota is not a good idea. At the end of the day the best person for the job should be hired”*.

5.5.7 Recruitment

A review of the recruitment process was suggested by participant D stating that perhaps *“opening the criteria for the initial recruitment might help”*. While participant E feels that that recruitment and awareness generation through a program recently implemented in Company X would be beneficial *“which was going out and educating people on actually the people that we do have within the business and how successful they’ve been, where they’ve come from and how they evolved from that through joining an IT company”*.

5.5.8 Work-life Balance

Both participants F and D have mentioned the work-life balance factor, stating that Company X provide quite a good work-life balance. Participant F feels that this is an area that if promoted would influence further women into the company. It is portrayed that this factor would be one that could prevent women from remaining in the field due to the requirements of the job. However she states that Company X *“are pushing for a work life balance to suit women. It’s one of the best I’ve ever seen, and people I’ve gone to college with don’t have the same flexibility by any stretch. So for here they’ve a real niche in that”*. She goes on to say that this is an area Company X should promote.

Chapter 6 – Discussion of Findings

6.1 Introduction

As laid out above, all six exploratory interviews were analysed and the data was grouped into a thematic structure based on the researchers' analysis and findings.

It can be seen that all six of the participants voiced their beliefs and experiences regarding the Gender Gap within the technology sector in Ireland, and specifically within the GSD department of Company X in Ireland, which can be somewhat reflected in the stances held within the literature review as described in Chapter 2. This is indicative that the theoretical stance on Gender Diversity in the workplace is to some degree accurate within the real-life attitudes and perceptions of women working within the technical GSD department of Company X in Ireland.

The following sections will present to the reader an amalgamated view of the findings from Chapter 5 in accordance with the academic stance as discussed in Chapter 2 where possible in terms of both complimentary and opposing data.

This chapter is presented in the format of a discussion taking into account the aims and objectives from Chapter 3, the findings from Chapter 5 and the literature review from Chapter 2 in a hope to present a method to positively change the Gender Gap within the technical GSD department of Company X in Ireland.

6.2 Objective 1: Exploring the Potential Causes

This looked at the potential causes of the Gender Gap in GSD of Company X, in Ireland and was explored by interviewing six female participants employed within the GSD department of Company X. Their portrayal of their perceptions, understandings, beliefs and experiences has provided the researcher with an understanding of the perceived potential causes of said Gender Gap.

6.2.1 Education and Background

The education and background of each individual participant was explored by the researcher in an attempt to understand if there was any differentiating factors between them which may have contributed to some participants pursuing a technical field over the others. The researcher did find that, of the three participants who did actively pursue a technical field of study and career, there was a large influence mentioned from either their respective family or school during early childhood towards having an interest in technology. Whereas the participants who did not actively pursue technology as a field of study or a career path did not allude to any strong influence in this same sense as the others.

The majority of the participants inferred that the education available to them prior to college was different to that available to boys of the same age. It was discussed how technical subjects were not available to them and how subjects which seemed suitable to the perceived career a girl should pursue was available to them and likewise for boys.

Interestingly this is concurrent with a study by Gokulsing & Tandrayen-Ragoobur (2014) which found the outperforming of girls over boys in an educational setting was not in correlation with the employment opportunities for women and was believed to be as a result of the subjects available to girls in school. It was considered they were oriented towards what was believed girls should study rather than preparing them with subjects relating to the job opportunities. This is reflective of the experiences of some of the participants

who portrayed subjects like home economics were highly applicable in their schools.

Some participants posited there was a strong influence from their families rather than from school towards a technical interest. However one participant specifically noted that the latest technology was available to her at home and that the subjects available to her in school were not different from that available to boys but this did not encourage her to develop any interest towards technology. This candidate felt it was down to the individual “*interest*” and that this was “*normal*”. While this could be seen as reflective of the beliefs of Bakan (1966) and Broverman et al (1972) that different sexes contain different characteristics and as such are more suited to and interested in different job types. It could also be a result of reinforced gender differences in early age as discussed by Goldberg and Lewis (1969) and Lindsey and Mize (2001) as encouraged by parental influences through activities and toys. It may not be as a result of intentional reinforcement of these gender activities however as this participant was one of four girls in a female family it could be possible that this was something that seemed natural, and “*normal*” as suggested by the participant.

6.2.2 Exposure

The level of exposure of the individual participants was explored and this became a theme within the findings. It was uncovered that all of the participants’ had a varying level of exposure to technology and the majority felt this was a contributing factor to their interest or aversion to the field.

It was found that the participants who pursued a technical field of study and career were all highly exposed to technology growing up. With one participant stating how she felt her interest in technology stemmed from the fact she was always surrounded by it at home due to her families interests. She also felt that her school friends who did not have this exposure at home and like her did not have any exposure at school were quite “*computer illiterate*” as a result.

Two of the three candidates who did not opt for a technical field of study or pursue such a career felt their lack of interest in this area stemmed from not having the exposure to it as a child and as such not understanding how interesting and accessible it was. Both also felt that with their exposure to this field as a part of their jobs they would certainly reconsider this as a field of study now and one of the two went so far as to state she was looking to pursue a part-time masters in IT and Business next year.

This belief by the majority of participants that the level of interest in technology has been closely related to their level of exposure to the same as a child is in harmony with the literature by Sanders et al (1997) Lindsey and Mize (2001) who posited that the lack of access to technical toys led to the lack of development of an interest in technology and that the activities and play at home that parents exposed their children to led to the gender type activities and play they participated in with their peers.

In contrast to the other beliefs one participant felt that exposure to technology was not a driver of the development of interest in the same and provided examples of her two children, a boy and a girl. It is her belief that the exposure to technology of both children was equal, she does not believe she treated either child differently however the interest in technology is vastly different. With the boy very interested in pursuing a career in this field and the girl having very little interest. This could however be in accordance with Goldberg and Lewis (1969) who posited that parents reinforce what is seen as gender appropriate behaviour with children as young as 13 months and the different sexes are treated differently according to this although this may not be an intentional action by the parents.

The researcher feels based on these findings and backed up by the literature that coincides with it, that exposure to technology at an early age is important to the development of interest in technology and as such attention should be concentrated on ensuring this is increased among girls if there is to be a decrease in the Gender Gap in the GSD department of Company X in Ireland and also on a broader level, the technology sector in Ireland. While it is unlikely this can be addressed at a parental level it could be suggested that

Company X attempt to address it at an educational level by offering services and education to schools.

6.2.3 Gender Differences

Feingold (1994) felt that different genders owned different personality traits independent of other influences. It was recorded that women tended to be tender-minded and risk adverse. One participant felt the same subjects were available to boys and girls in her experience and that the exposure to technology at home had no influence on her interest in technology and this was simply down to a gender related differentiation in interests. Girls as a whole were simply interested in different things. However it could be seen as a possibility that due to the gender personality traits (Feingold, 1994) that technology as an unknown entity could be seen as a risk factor to some women who have not before been exposed or educated on the subject.

The same participant in referring to her daughter stated "*she is more like me*"... "*more into design*", while this could be concurrent with Feingold's (1994) gender personality traits it should also be noted that Goldberg and Lewis (1969) as already mentioned showed parental influences were different dependent on the sex of the child and sex-appropriate behaviour was encouraged. Stating the "*girl is more like me*" may be evidence of this, without realisation, the participant could be influencing perceived gender appropriate behaviour with activities and toys.

Another participant reflected on the purchase of a computer into the home. It was for the use of her brother and any tasks that required the use of the computer were to be performed by him as it was thought he was the one who should be interested in it. This in itself seems to be in accordance with the beliefs behind Eagly's (1987) Social Role Theory in that there is a perception that certain attributes are evident in the different sexes and as such an understanding of the different roles they should perform. Likewise this participant felt that the subjects available in school were directed towards

what was felt girls should be interested in and what was appropriate for the education of a girl such as Home Economics.

Berger et Al. (1972) Expectation state theory can also be seen as evident in one participant's statement surrounding the gender perception of tech jobs, positing that these are seen as male roles and women are fearful to step into or explore this arena. Likewise although technical subjects were available to this woman in school it was stated that girls were avoiding these subjects as sometimes were afraid to step outside the "norm". The expectation state theory reflects a reason to be fearful wandering from what is perceived to be normal.

6.3 Objective 2: Understand areas which could lessen the Gender Gap

This was performed with intent to understand how the Gender Gap within the GSD of Company X, in Ireland could be lessened and to reveal actionable points to achieve this. Although this objective specifically focused on the GSD department of Company X in Ireland it is believed that some factors could be extended to address the Gender Gap in the technology sector as a whole in Ireland.

6.3.1 Exposure

As expressed by the majority of participants and the researcher earlier in this chapter, and backed by the findings in the literature the exposure to technology at an early age is imperative to the development of interest in technology. It would be the researchers advice to generate attention in this area and increase the exposure among girls if there is to be a decrease in the Gender Gap in the GSD department of Company X in Ireland. While it is unlikely this can be addressed at a parental level it could be suggested that Company X attempt to address it at an educational level by offering services and education to schools.

6.3.2 Job Role Perceptions

Some participants felt the role perception was a problem and a contributing factor of the gender gap with in the GSD department of Company X in Ireland. It was felt that a misconception regarding the complexity of some of the roles within GSD was a deterrent. It was also felt that there was a lack of understanding of the requirements and the environment in which the roles are held. It could be seen that with this some women do not have the self-belief that they are competent enough to perform the job.

Eagly (2002) depicts gender roles as “consensual beliefs about the attributes of women and men” that they display agentic and communal characteristics accordingly, and this consensual belief spills over to the qualities required for

specific job roles. If these consensual beliefs of attributes and job requirements do not match up then it is deemed a certain sex is not suitable for a specific job role. It should be a consideration that some women may not have a sense of self-belief or awareness of their skills and as such be turned off by the overly complex wording and requirements of some job specifications.

As such it would be the researchers' consideration that a review of the job specifications and requirements should be undertaken

6.3.3 Work-Life Balance

It was the consideration of some participants that the nature of the roles available in the GSD department of Company X were in themselves a deterrent for women entering the department. It was believed that as a twenty four seven operation it was less attractive to women. Bruce (2013) states how IT specialists are recorded as working the 3rd highest hours, while Mellor (1985) outlines how IT workers are more inclined to be needed for flexible schedules with 30% more working flexible shifts than the industry average of 10%.

However another participant has stated how positive the flexibility offered by Company X within the GSD department is. It was felt that Company X do not promote their flexibility and promotion of a healthy work-life balance well enough to those outside.

Bianchi et al (2000) found that housework performed by women was declining but still two thirds of household chores are carried out by women. It is also felt that women are still the primary care givers.

With this in mind it is notably logical as to why the flexibility and work-life balance offered by Company X could be seen as a positive characteristic and should be promoted. One participant stated the work-life balance within the GSD department in Company X was better than any other company she had worked for or any of her friends were working for. This becomes especially

important as children are introduced into the family otherwise one parent may need to be considered as a stay at home parent.

In accordance with the participant, the researcher feels that this could be a large promotional point for Company X and consideration into advertising the same should be given.

6.4 Objective 3: Identify Macro-Environmental Forces

The objective was to identify Macro-Environmental forces either internally or externally to Company X which could contribute to the Gender Gap in GSD department, positively or negatively. It was also felt these forces could be an overall contributor to the Gender Gap in the technology sector in Ireland and should be considered as such.

While culture seemed to be the main perceived macro-environmental force which influenced the gap it should also be noted that Economic and Technical forces were briefly mentioned as a positive force in influencing a reduction of the gap. It was believed that with technical developments, and the popularity being generated for technology, an interest would be developed in accordance. Also it was felt that with these technological developments, Irelands economy would flourish due to its' propensity to attract technological companies.

6.4.1 Culture

Several participants felt that culture was a dictating force which was influencing the gender gap in the technology sector in a negative way in that it was a contributing factor to the gap.

Some participants felt that, due to cultural influences, the subjects available to girls in early education were limited as only subjects deemed appropriate or suitable to developing the girl towards a conventional female job were available to take.

It was felt that culture dictates conventional jobs for men and women and that schools should follow this lead and develop a curriculum which educates girls and boys with subjects to attain these gender specific jobs.

Social Role theory, Role Congruity theory and Expectation State theory all could be seen as existent only because of this culture of gender roles. It is the researchers belief that this culture needs to be developed and that as

more women are successful in this field that this will occur naturally but until this occurs promotion of women in these areas is necessary.

Chapter 7 – Conclusions

7.1 Opening Comments

This final chapter will draw a close to the research. Here the researchers' final conclusions regarding the research efforts into understanding the Gender Diversity Gap in the GSD department of Company X will be presented to the reader. Chapter 2 has provided the reader with awareness into the academic literature available in terms of gender diversity in the workplace, while Chapters 4 and 5 have provided an insight into the real-life setting of Gender Gap within the technical GSD department of Company X in Ireland along with the perceived factors that are influencing this.

7.2 Objective 1 – Understanding the Cause

Diversity in organisations as discussed within the literature review is vitally important for the success of businesses. IBEC (2014) have stated the benefits which link a diverse workplace with improved financial performance, innovation, competitiveness and corporate governance. With this in the minds of many businesses they are still struggling with gender diversity in technical departments. According to the Huffington Post (Peck, 2015), females at Google make up for 30% of the workforce however this lowers to only 17% in technical jobs, the same can be seen in the technical roles at both Facebook and Twitter with 15% and 10% respectively.

Company X is faced with the same disparity within the technical GSD department. While initiatives are being run to ensure all staff are provided the support they need in terms of developing their skills in an effort to sustain employees, more needs to be done to encourage women to enter the field in the first place.

It was the objective of this research to explore the perceived potential causes of the Gender Gap within the GSD department of Company X in Ireland. In doing so it was found that in the main women in employment in these technical roles, whether from a technical or non-technical background felt there were four main contributors to the large Gender Gap which were outside of the immediate control of Company X.

These contributing factors were all around the development of an interest in technology in early life; the Education and Background of the Individual in terms of availability of technology and technical subjects, the Exposure to Technology Growing up, the Gender Differences in Interests and a macro-environmental force in terms of Culture dictating appropriate Gender Roles.

In the main it was believed the Gender Differences in Interests, while possible, is a result of differentiating characteristics in genders and may also be as part of unconscious bias as such in terms of a parental influence towards gender appropriate activities, games and toys. This like gender specific education could be as a result of cultural beliefs or perceptions as this

is how it has been in the past. It is the researchers belief that if tackled at an educational level this will reinforce change throughout and this cultural perception will dissipate.

7.3 Objective 2 - Understanding areas which could lessen the Gender Gap

After understating the perceived cause of the gender gap, the secondary objective was to attempt to understand what the individuals immersed in this area and surrounded by this Gender Gap felt could be done to lessen the gap going forward.

In the main it was felt that exposure to technology at a young age sparked an interest in the same. Without this interest it was unlikely to be an area that women would attempt to pursue as a career and in turn would contribute to the Gender Gap in the GSD department of Company X in Ireland. It is the researchers' belief that inducing a level of exposure to technology at a young school-going age will engender a culture of interest and inquisitiveness from children and may be the encouragement that is needed for girls to pursue technology as a field of study.

In terms of actionable areas that were in the control of Company X, two points emerged from this research.

The first of these is job role perceptions. While women may have less confidence in terms of their abilities according to Feingold (1994), the format and wording of job specifications and misconceptions surrounding the job requirements and characteristics of those performing the jobs is felt to be contributing further to low numbers of women applying for jobs within the GSD department of Company X. The researcher feels an overhaul of job specifications and better communication and promotion surrounding the role requirement could be a starting point to tackle this issue.

The last of these actionable areas raised through the research is the perception of work-life balance within the technology sector. It was felt that as a whole this sector can be time demanding and this did not appeal to women especially when familial responsibilities were considered. It was however also felt that Company X were very mindful of promoting a healthy work-life balance for their staff and were very flexible as needed. It was believed

however that this characteristic was not self-promoted by the company. The researcher feels this could be a selling point for Company X in terms of promoting the business with female candidates for employment and could be easily tackled through within the recruitment process.

7.5 Recommended Future Areas of Research

Several areas of future research could be conducted from the basis of the findings within this dissertation. Firstly, it would be recommended to extend the research to both male and female participants and extend the scope to employees outside just the GSD department of Company X. This would be beneficial to understand the perspectives of those outside of the GSD department as to if they have any interest in joining the GSD department.

The second area the researcher would recommend would be to implement some of the suggested actions which have arisen as part of this research and to measure the outcomes with an action research methodology. For instance promotion of the flexibility of the jobs in regards to work-life balance and measure any increase in candidate submissions for jobs positions.

The final recommendation from the researcher in this instance is to extend the research to include in the short-term college graduates to understand the perceived employment opportunities female graduates believe they have available to them. While as part of a longer-term research it would be interesting to explore the perceived educational opportunities of female students at a secondary school level in an effort to understand if changes are needed to promote the opportunities at all levels.

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Appendix

Submission of Thesis to Norma Smurfit Library, National College of Ireland

Student name: Sibéal Dunne Student number: x06507808

School: National College of Ireland Course: MSc in Management, Part Time

Degree to be awarded: Masters in Management

Title of Thesis: **Women and Technology: Why the Gender Gap?**
An exploratory study into the perceived influencers of low Gender Diversity in the Technological Department of a Multi-National Technology Solutions company in Ireland

One hard bound copy of your thesis will be lodged in the Norma Smurfit Library and will be available for consultation. The electronic copy will be accessible in TRAP (<http://trap.ncirl.ie/>), the National College of Ireland's Institutional Repository. In accordance with normal academic library practice all theses lodged in the National College of Ireland Institutional Repository (TRAP) are made available on open access.

I agree to a hard bound copy of my thesis being available for consultation in the library. I also agree to an electronic copy of my thesis being made publicly available on the National College of Ireland's Institutional Repository TRAP.

Signature of Candidate:

For completion by the School:

The aforementioned thesis was received by _____

Date: _____

This signed form must be appended to all hard bound and electronic copies of your thesis submitted to your school

Informed Consent Form

The following consent form was provided to all participants prior to the interview to ensure a full understanding and consent was provided prior to embarking on the interview process.

Consent for Participation in Interview Research

I volunteer to participate in a research project conducted by Sibéal Dunne from The National College of Ireland. I understand that the project is designed to gather information surrounding the Gender Gap in the GSD department of Company X in Ireland. I will be one of approximately 6 people being interviewed for this research.

1. My participation in this project is voluntary. I understand that I will not be paid for my participation. I may withdraw and discontinue participation at any time without penalty. If I decline to participate or withdraw from the study, no one on my organisation will be told.

2. I understand that most interviewees in will find the discussion interesting and thought-provoking. If, however, I feel uncomfortable in any way during the interview session, I have the right to decline to answer any question or to end the interview.

3. Participation involves being interviewed by Sibéal Dunne from The National College of Ireland. The interview will last approximately 30 minutes. Notes may be written during the interview. A recording of the interview and subsequent dialogue will be made. If I don't want to be taped, I will not be able to participate in the study.

4. I understand that the researcher will not identify me or my organisation by name in any reports using information obtained from this interview, and that my confidentiality as a participant in this study will remain secure.

Subsequent uses of records and data will be subject to standard data use policies which protect the anonymity of individuals and institutions.

5. Employees from my organisation will neither be present at the interview nor have access to raw notes or transcripts. This precaution will prevent my individual comments from having any negative repercussions.

6. I understand that this research study has been reviewed and approved by The National College of Ireland.

7. I have read and understand the explanation provided to me. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.

8. I have been given a copy of this consent form.

My Signature	Date
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Sibéal Dunne	Date
--------------	------

For further information, please contact:

Sibéal Dunne

E-Mail: Sibeald@gmail.com

Interview Guide

Questions for All Interviewees

- What is your nationality and where did you grow up?
- Do you have a large family?
- Did you go to School or College in the area you grew up?
- What did you study in College/School?
- Were you in an all-girls or mixed school?
- Do you feel there was an exposure in school or at home to technology from an early age?
- Do you feel the classes you took that been beneficial to the role you do now?
- Working within a Technical Field have you noticed a 'Gender Gap'?
- Could you tell me about your experiences of any 'Gender Gap' and why you think it might exist?
- In your opinion, are there any macro-environmental forces that are influencing this gap either positively or negatively? For instance, Political, Economic, Socio-Cultural or Technological factors.
- What do you think could be done or improved upon to reduce the gap for future generations?
- How do you feel about businesses implementing quotas of the number of women they want in specific roles?

Questions for Technical Interviewees

- What do you think influenced your decision to study a technical subject?
- What in your opinion influenced your decision to choose technology as a career path?
- Did you notice any 'Gender Gap' in other areas of School or College for instance?
- Why do you think a Gap in these areas might exist?

Questions for Non-Technical Interviewees

- Did you ever consider any of the STEM fields as an option for studying?
- Would you consider yourself a 'technical' person now?
- Was the field of technology ever a consideration for you when choosing what field to study?
- Was technology ever something you were interested in?

- You work within a technical field with very technical people, how did you make that jump?

Interview Transcription Key

The following Key is used when transcribing all of the following interviews

E – Facilitator

I – Interviewee

Interview 1

E– Hi [Name Removed], thanks for joining me today, so could we start by you telling me what your current role within the GSD department is?

I– I'm a Technical Resolution Manager, I've been in that role for coming on 18 months now.

E– Can I ask you, what is your Nationality, where did you grow up?

I– Yeah, of course, I'm Irish. I was born here... in Ireland, and grew up in Wicklow, my Mam and Dad, Grandparents, all of them, are from Wicklow.

E– And do are you from a large family?

I– Yes, probably large enough, I'm the youngest of five, three girls, two boys

F – OKAY, and did you go to School or College in the area?

I– yes, well I went to school in Wicklow Town, but for college I had to travel to Dublin... every day. There isn't any colleges down there that like... that you could really go to like. I went to college in the city centre after my Leaving.

E– Oh, very good, and what did you study?

I– Ehh... It was a course called Software Systems.... It was a 4 year honours degree... and then pretty much I was straight into work in 'Company X' after it... Even though, like it wasn't much to do really with what I do now

E – What do you mean by that, you work within the Technical Support Department, that would have been a technical degree you studied right?

I– Well yeah it was... but like... emm... well like the Degree, that was more software development... which was fun and all, like it was interesting, but it's not me. Not in the sense that I was any good at it anyhow. I got my degree but I knew it wasn't going to be something I'd get a job in... that was never going to be me.

E– So how does that differ from the Job you do now then?

I– Eh... Well when I started in 'Company X' I was straight into server support... I hadn't seen a server before to be perfectly honest. 'Cause as I said I was on the software side before that. But I started supporting servers, it was tech support like, a

call centre, so phone support. I didn't stay there long though, then I was up to storage support and networks, switches... all of that. There was software in there too... but that wouldn't be the same, it wasn't development, it's OS support and third party software support but not like what I would have been doing in college. I suppose college gave me a grounding for it all like, but it wouldn't be the exact area that I studied that I work in like... you know?.

E – Ok, I understand. So, as a woman working within Tech Support, you probably have noticed that a definite Gender Gap exists, right?

L – well yeah... yeah you could say that.

E – Could you tell me about your experience with this?

L – eh... yes, well... well I suppose really it's just that's the area we work in right? There's not many women out there are there, in that field? So you can't expect there to be.... Like you can't expect there not to be a gap then really can you? In all the teams I have worked in so far in my career in 'Company X' I've not worked with more than 1 other woman. So yeah there is a gap. The teams would be no smaller than maybe about 15 heads and you're talking a maximum of 2 women I have seen in those teams at any one time, like then you've got times when there were no other women, I was the only one..... but other teams could've had none. eh..... even from.... Like even if you are to look at college, when I was in college it was a male dominated course I was studying. I think it was something like maybe like... 40 or so people in the class in my year starting out... and that was male dominated because there were maybe 4 girls out of all that... well 4 starting out... I think 2 of us graduated in the technical course. So I suppose... I think what I am trying to say is, well you don't have the women really high up there in the numbers taking the courses that lead into IT so if you don't have that how can you expect that to translate to an even number across the board? There has to be a gap doesn't there? I don't think that means anyone is trying to stop women enter that area of work necessarily but if you don't have the numbers coming in, who want to work in that field then you can't exactly have an even number of women and men or a more balanced number then can you? Gender inequality isn't something I have personally encountered so I can't really talk about that like... to me I have worked just as hard as any of the men in my field and have excelled fairly well, more so than some of the men I joined with... so I really can't say I have experienced any inequality there... but as far as I know it I was hired at a lower salary than the others I started out with... that was because they

were more experienced than me. But again, I can't say that overly bothers me... I have had more promotions than they have so I am sure I have made up that difference.

E– So, you seem to be suggesting that there is... eh... a gap, a gender gap within the area of technology even before your working life began. Could you tell me more about this? Why do you think there is a gap there?

L– Well, myself I was interested in technology because I was always around it, I'm the youngest of five and there was always some new gadget to play with. My Dad and my brothers always wanted to... you know, keep on top of the latest technology. That's probably why I decided to go down that road as a career... well that and it was an area I thought I could get a job in after college. But then like my school friends, you could see the difference then even, maybe they weren't surrounded with technology at home and sure they could hardly turn on a computer... and still would be kind of... computer illiterate. I think myself that it's a lot to do with what you are exposed to as a kid. So, we went to an all-girls school so our options... when it came to choosing what class we wanted to do like, they were oriented towards girls... or I suppose what they thought girls should do. Like you had your Home Economics classes and all of that... now, I'm not saying there is anything wrong with that either... but I don't think it really gives people, girls, a full... you know... exposure to what they can do. Like really there should be all the options in girls schools that there are in boys.... and that way I think you are going to get more girls who are leaving school and saying... hey, you know what I think I'll study some sort of course to do with computers... you know? Then you'll see the difference. That's when you'll see the gap... narrowing. But if you don't have them leave school wanting to go down that road then you'll not have them...eh... available to companies when they need them. Like, personally I don't think this whole looking at a business and saying, "oh, you need X number of women by the end of 2020" is helping anyone. That's just filling quotas. We shouldn't be looking at it that way. It should be the best person for the job, and if that's a man, woman... or a... a monkey! Then that should be who's hired! So, so... eh what I'm saying is you can't expect there to be a change overnight just 'cause you say you want to narrow the gap. You can't narrow the gap if there's not the talent there. You have to work on education on making sure kids have all the options and then there'll be change. You'll see the gap... naturally narrow. Does that make sense?

E – yes, of course. That’s great. Ok so, do you think there are any other macro-environmental forces that are... are... eh... influencing this gap?

L-ehh... umm....

E– So, for instance, socio-cultural factors, political, legal, economic, technology... are there any factors there, that in your opinion influence the gap?

L– Well, yes, yeah you could look at some of those as having an impact couldn't you? Like the cultural side of things. Like to now... there hasn't been... like there's this rule isn't there?... maybe unspoken like but that has said women do X and men do Y... so schools take that and say well then we'll teach women how to do X. But has that developed? I don't know myself. As like... em... you know, now we are living in a different world. Women don't just stay at home or just limit themselves to what you could say are the conventional jobs... and like, you can see, there's so many studies that say that a mixture is needed... of men and women that is, well not only men and women but of everything, culture everything, a diverse way of thinking is beneficial to the company. So, we know that's good for the development of businesses and we know that women are well able to do the job but still I suppose you might still have a cultural... eh well like a culture that still sees... I suppose conventional jobs for men and women. With that culture there it's going to spread downwards... isn't it... and kids are going to think the same, which I suppose brings you right back around to kids in school not being exposed to technology and that which would influence them and open them up to areas that they could take as a career path.

E– I see... and what do you think about the others? Political, Technology, Economic factors? Good or bad now at influencing the gap.

L– Um hum... well yes I suppose you have political factors at the moment which are trying to reduce the gap. But as I said before I don't believe in putting quotas in place to narrow it. There has to be culture of hiring the right person for the right job rather than the 10th best person for the job because that persons female and you've a quota to meet... right? And when you look at the government doing the same, putting quotas in for their own office it really doesn't set the right example at all now. We can go too overboard with this type of thing. We all know that it's the best thing to do... not only in terms of it being right, but it's good for the business, financially,

developmentally to have a diverse workforce, but do it the right way. In terms of the others... eh technology and...

E– Technology and Economic

L– yes, well I think these will both help to reduce, so you have so many new gadgets that are interesting. So many kids now are being indoctrinated... indoctrinated... into technology from a young age with smart phones, tablets... everything. So you would hope that this will bring kind of like... I suppose, awareness and openness. You've got the likes of coder dojo and IT is not just for geeks and all of that to try and drive awareness and encourage kids. And the economic factors help too don't they? Ireland is up there really for large tech companies at the moment so with that being there it's a huge opportunity for them when they leave school that there are jobs in that area so it might add to the push towards tech as a career path right?

E– OKAY, very good. And what do you think could be done, or improved upon to reduce the gap for future generations?

L– Well really it's all got to be the focus on kids I think. And culture I suppose is tied to that. Um... like, so... if we can have a culture that doesn't have the as I said conventional way of seeing careers for boys and girls and if we have the educational system to back it up then we should see the difference. But at the moment, I think anyhow, that without doing that you just don't have the workforce of educated women, in this area anyhow is what I mean... to like reduce the gap the way it should be. Do you know what I mean?

E– OKAY, very good. That's been great. Thanks so much for your help. We'll wrap it up there.

Interview 2

E– Would you mind telling me your nationality and where you grew up?

L– I'm South-African and grew up in South Africa so... em... from two separate parts... in a very small rural area in the early stages of my life and then Johannesburg which is a major city where I grew up

E– And do are you from a large family?

L– No, not at all, I only have one brother... so a small family

E– OKAY, and did you go to School or College in the area?

L– Em.. I went to school in Johannesburg and then college in north-west but it's close to Johannesburg but not in Jo-berg

E– Oh, very good, and what did you study?

L– I studied a BSc in Consumer Science

E– OKAY, so not technical

L- *Laughs no, no, not technical, no not at all

E- Did you ever consider any of the other STEM fields? So technology, engineering, mathematics, any of those areas before going to college... or was it always the consumer science?

L– it was between pharmaceuticals and consumer science so I did have mathematics and science and biology would have been... and home economics would have been my major subjects in high school... because it works a little bit different here I think, we have 6 major subjects two of them would be languages so it was always more biolog... biological or a more science driven field rather than technology

E– And would you have ever considered the technology area, was that ever something that interested you?

L– No not really, I could... I, we probably only had internet... when I went to university... like we had a computer growing up... but that's because I'm like... we emm... internet wasn't as freely available as it was, would be now. Like you wouldn't have that exposure to em the technology as such

E – So, now you work within Technical Support in what can be a technical job, how did you make that jump?

I – So I was employed by ‘Company X’ so as, for my customer handling skills... so I was employed as a coach for a technical support team and that was only because of my vast em.. knowledge in dealing with customers and face to face customer handling skill... so I’m not at all for my technical knowledge.. so I joined the technical team as a coach and a quality lead for case management... em solely for the purpose of customer handling skills and then that evolved into a more technical role, escalations point so I had to up skill myself very quickly to be able to do the job that was needed at the time in the team... so it was more out of need... em for the team needed rather than something I was interested in

E – Looking back would you re-consider studying a technology field if you were to do it again?

I – Definitely, even from high school I think... em the subjects, kind of that I choose was more... em was kind of a package a lot of females would have chosen kind of going the home economics route... em you know sewing, food and nutrition and biology, would be I think gender driven more than something.. like we had computer studies or you know accounting packages on some certain fields would have been more technology driven... I think you just stay away from it because I think definitely where I’m from it had a gender... link to it.

E – So were you in an all-girls school or a mixed school?

I – Em... it was a mixed school, but in my... em so our high-school works a little bit differently, you’ve got 5 years of high school so your first two years I was in an all-girls class and we didn’t... like I didn’t really have other classes with... boys. So only my last three years, I had a mix and I think that also, definitely, after your first two years you decide on your main subjects and I think that obviously drove me not to have that kind of.. em openness to other fields as well. So I do think its starts as early as high school... kind of where you’re going to end up from what the subjects that you choose. And obviously the subjects ultimately.. em you need certain subjects to study certain fields.

E – Ok, yeah, I understand. So, as a woman working within Tech Support, you probably have noticed that a definite Gender Gap exists, so would you have

any input on your experiences around that and why you think there is that gap there at the moment?

L – I think it em there's two ways you can look at it.. em I mean traditionally it could be seen as more of a mens role like, something like being a contractor would be seen as or a nurse would be seen as more female like more females would do the role, I think it's changing over time... em but I do think it was.. there's a... it could be that men are more interested in technology from an earlier on age like even playing certain games... or you know building things and taking them apart... so I think it's just breaking down the diversity barriers across what the role entails like it's not as technical as mechanic working on a car would be, 'cause that would be the.. it's the same problem in a role like that, like its seen as a manly role.. and I think em its changing but I think we're still a long way off breaking down those walls... but I mean, it could be just personal interests that males would be more interested in the type of role it would be.. em.. more analytical, breaking down what the problem, fixing like a.. like... maybe just an interest thing or maybe it could be em the way people are raised to be that there is a stigma that... yes now females I mean... now we can be doctors, we can be lawyers and that was kind of addressed about 30 years ago that women can do any... everything, but does women... would women want to do something like this... yes we can do everything but I don't know if there is an interest... from an earlier on age to be interested in technology.

E – **And you brought up a point there of how you are raised, with one brother did you have that exposure yourself to technology and gadgets?**

L – Yes, my brother would be much more interested in technology from an earlier on age, like that always his thing where it wasn't seen as... like he was always busy with it and even...ok, like this might sound bad but being from South Africa we only got a computer... em in my early teens, when we were teenagers, so he would have been in high.. you know just in high school but eh so he is older than me... but he was the one, it was for him it wouldn't be... like it wouldn't have been for me and for him, it was for him, like getting a computer for you know, because he would be interested in those things and he would be the one getting to know everything and showing.. like if there was something to be done he would be the one doing it but I think he had a natural interest too

E – **Ok so, do you think there are any other macro-environmental forces that are influencing this gap? For instance, socio-cultural factors, political, legal,**

economic, technology... are there any factors there, that in your opinion influence the gap?

L – Emm.. that's a bit tough... so the way, just for instance so my first years of high school it was compulsory for all girls to have typing as a subject and for all boys to have wood-work as a subject for the first two year... and luckily for me that's one of... like I can type properly now so I'm very happy for that it's just like you know, females are more pushed into you should be good at typing and men should be doing something with their hands fixing doing something physical so it's definitely I think a culture thing... em but I don't know how it is now in schools, I wouldn't be able to say but I think in my time which would be.. that's our leaving cert that you call it, about 12 years ago, so it could have changed a lot and I don't think they force any girls to have typing now.. but it's just a funny way of.... It shouldn't be... you know it shouldn't... ok, em like our curriculum changed once I was in school I think it probably did change but it's just the way it's expected of a girl.... which is a gender to have a certain subject because of the gender not because of the interests, so there's definitely a push into the direction you had to take

E – So how do you feel about quotas, businesses implementing quotas of the number of women they want in a particular area by a certain date?

L – Um well... I'm from a country where we have something similar, it's called black empowerment so the government also politically wants to drive a percentage of an ethnic group into the business which is fine but I do think it needs to be... diversity is not just from gender it's more from your background your experiences, what you can bring to the table... so I'm happy with diversity being.. em enforced but it's not just say gender because you might have... yes you're a female but your interests might not be in a certain field so I think it's more about what you can bring, having different types of personalities around the same table as opposed to having all...say type A personalities but maybe have a mixture of people around... driving diversity in that. Should there then be... gender diversity in that group, that's an added bonus but it shouldn't be you're a female, and now you're bringing diversity, because you might have the same mind-set as the person next to you and you wouldn't really bring that diversity to the team. Whereas if you're a different... if you have different skills, different cultural backgrounds if you can bring something different to the table then that adds diversity more than your ethnic background or your gender. That's how I feel about it anyway.

F – So then, just the final question that I will ask you. What do you think could be done, or improved upon to reduce the gap for future generations?

I – Well, I'm not able to talk about schooling in Ireland per say but I do think it starts at an earlier age not to have gender specific subjects or you know open it up for all genders to be interested in and to see if there is an interest in either females or males and that goes both ways... em I... studying something... I had only females in my em... University class, 90 all females and I think only 3 years after I graduated there was the first males so it goes both ways into even the roles that seem predominately for females... to have... that open up to males and break down the stigma that maybe that's only for males or female or what it's really like so I think it would... like driving it from an earlier on age in the schools and even university having that diversity in the classroom and then also just for education.

F – Are there any other areas?

I – Em.. in the workplace I think it's also important to have... em to try and... promote the roles as there's females but it's not a gender based role... so, I mean, we're in a field where you're the only female in your team and there's very few of mine in my team... so people might see, Oh.. it's not something I can go for, it's seen as a male role... but just to break down those barriers, to see that it's not... not really about, that's the technical ability you need it's not our being male or female it's more about certain skillset that you can learn and you can pull those things up over time. So it's about promoting what a role is and not promoting female diversity in that role more so what the role is and what skills are needed for that role

Interview 3

E– What is your nationality and where did you grow up?

L– I'm Irish – grew up in Dublin and Westmeath, my parents moved us to Westmeath when I was twelve.

E– Do you have a large family?

L– Six of us in total, I'm the eldest, mam, dad, three sisters and me.

E– Did you go to School or College in the area you grew up?

L– Yes to school in Dublin and Westmeath... no to college, I went to college in Dublin city centre... I moved back there then.

E– What did you study in College/School?

L– BSc in Software Systems and an MSc in Web Technologies... all in the same college

E– Were you in an all-girls or mixed school?

L– I went to a mixed school at all levels.

E– Do you feel there was any disparity between the classes available to girls and boys?

L– Well, not really... the subjects each gender could take were the same. The same were available to girls or boys. But I suppose what you did see was more like girls would stick to what were seen as more feminine subjects and likewise for boys. So there did seem to be a split in that regards. It wasn't that you couldn't take the subjects though, but I suppose some kids would be less inclined to step outside the norm so even though a subject might interest them, like a technology based subject, if it's not seen as kind of normal as such to take that class then they are going to stay away from it

E– Do you feel the classes you took in college have been beneficial to the role you do now?

L– Yes definitely – I am not working directly in what I studied in college but it definitely helps me do my job better now. It has given me a better understanding of software and technology which allows me to integrate with multiple teams within a project

E– Working within a Technical Field have you noticed a ‘Gender Gap’?

L– Yes, definitely. There are many times I have been on a project where I am the only female. Throughout the entire IT sector – whether it is helpdesk, support, development or QA there is a larger male presence. Especially in more technical dependent roles.

E– In your opinion, are there any macro-environmental forces that are influencing this gap either positively or negatively? For instance, Political, Economic, Socio-Cultural or Technological factors.

L– I think the main factor in this is Socio-Cultural. Technical jobs are seen as male oriented roles – people have a perception where they think anyone who does a technical course must be computer geniuses who play video games and are nerds and that perception turns a lot of girls off from going down that route. The other factor I think has a big impact is Technical – computers ‘scare’ people. People think that you need to be extremely intelligent to work in IT or with computers/technology... but what people don’t understand is that you don’t have to be the next Bill Gates to work in the industry!

E– What do you think could be done or improved upon to reduce the gap for future generations?

L– What is needed is more awareness of the courses that are available and the various career prospects that come from it... this needs to start in secondary school when pupils are trying to decide on their choice of college/course. I didn’t get this opportunity myself but I was lucky in that my parents got a computer and then the school which sparked my interest. In Company X at the moment we are currently

working on way to go out to students and show the different types of careers they can have with their technical degrees.

E– How do you feel about businesses implementing quotas of the number of women they want in specific roles?

L– I think a company should be aware of the Gender Gap within their company, they should consciously try to recruit women as equally as they do men but having a quota is not a good idea. At the end of the day the best person for the job should be hired.

E– What do you think influenced your decision to study a technical subject?

L– It all started back in primary school – we got a computer into the classroom in 1999. We had gotten one at home the previous Christmas so I knew some things about paint and word – the big apps back then... When we got the computer in school I was able to show off all my skills and got a lot of praise for it – and that was it. I never really knew what wanted to do... I still don't... but I enjoy my work now and 'working with computers' was the only thing I thought could be a career for me.

E– What in your opinion influenced your decision to choose technology as a career path?

L– The same the answer to the last question really. Also the fact that I really had no idea what else I wanted to do – I wasn't the most academic person in school, quite average grades, the guidance counsellor was useless. I only put 4 courses down on my CAO – all technically based, two in Dublin, two in Galway. I had no back up!

E– Did you notice any 'Gender Gap' in other areas of School or College for instance?

L– For classes in school like technical graphics, agricultural science and home economics there was a gender attendance. The college I went to was very small and only had a school of computing and a school of business so I can't really comment but you could see that there wasn't any significant gap in the school of business. Even within the school of computing you could see the difference between courses

for example a course that wasn't as technically heavy there was a higher male to female ratio.

E– Why do you think a Gap in these areas might exist?

L– To the world the classes, courses, careers are seen as gender orientated. In the Technical and IT sectors this is very much the big reasons – women don't think they will fit is as they think all technical jobs mean you must need to know how to code and like I mentioned before people are 'scared' by that.

Interview 4

F - So, if I could just start by asking what your nationality is and where you actually grew up?

I - Ok, I am Venezuelan and lived in Venezuela until I was seventeen. At that point I moved to Texas. I lived in Texas for ten years and then I moved to Ireland about nine years ago.

F - Ok, and are you from a large family.

I - Yes, I have 5 sisters. I don't have any brothers.

F - And you were obviously in school in Venezuela until you were 17, and then was it high school in Texas?

I - No I finished high school in Venezuela and then I moved to Texas and I did college there, University. I did economics.

F - And at a school age were you in an all-girls school or a mixed school?

I - Mixed school

F - And looking back, do you think there was any difference in the school subjects taken by girls and boys or the availability of such subjects between the genders?

I - No, not really. There were differences in the subjects different genders were interested in, but I think that is normal, but the availability to both were the same

F - And did you grow up around technology?

I - Well it wasn't something I would have really been interested in. So would not have grown up buying gadgets or games or anything like that. My family would have owned the latest technology... for the house for instance but it wouldn't have been something I would have immersed myself in... not like my son [name removed] does now anyhow.

F - do you feel that there were options for you in school to take subjects that were technically oriented?

I - there were yes, but again for me it was not of any interest

F—Ok, so going from college doing Economics into the role you do now in work, which is quite a technical role, yet you don't have a technical history, as in education, so do you feel that there were any problems transitioning or how did you make that jump?

I—Well I actually got hired to translation for a technical team out of hours, so the calls were meant to come in from different countries and the technicians only spoke English so they needed people to translate. They didn't require any technical background, although it did help to know some of the terminology in both languages. But after a few months they decided that it was a little bit silly to just have us translate, so we got trained. We got the technical training to become technicians ourselves. And that was very interesting because we had very, very little technical background beyond just using a system. But yeah that's how it happened, we got the technical training and started the doing the technical job.

F—So obviously you were able to take the technical training on board and do the job, so do you think if you were to look back now, the area of technology, would that be of interest to you if you were to go into college now, knowing what you know now?

I—I don't know, not necessarily. I think I am a more creative person, more on the artistic side and I would be. I don't necessarily think I would go into a technical role, no.

F—Ok. You know yourself, you are the only woman in the team that you work with now. So clearly there is a gender gap on the floor, in technical support anyhow. In your opinion or in your experience could you tell me anything that you have experienced in regard to the gender gap, or your opinion as to why there is a gender gap on the floor.

I—As to why there is a gap, I would also have to take into account that the team I work in works out of hours, so I think we work weekends and we work through the night. And I think that in itself even if it were a customer care job or any other job, I think the shifts itself would be less attractive to women. I suppose the fact that it's technical just makes it less attractive really. Sorry what was the other...

F—Its alright, and then in general, other than just in the team but in general, do you think of any reasons why there are fewer women working down stairs.

L— I mentioned the kids, because I have a boy and a girl and they're less than a year and half apart. And they've been exposed the same, both my husband and myself are in technical roles or have been in technical roles, and there is a lot of technology in the house. Probably more than are in other homes, and I can see that my son from a very early age was really into it and enjoyed it. He knew about IP since he was six years of age and manages a server, a virtual one at that since he was 8 or 9. Where our girl would just go on it every now and then to play a game but she's just not into it that much.

F—OK, and do you think [boys name removed] is going to develop that, will that be an area do you think that will be interested in?

L—He wants to be an engineer. He goes between being an engineer or being a video game developer, so I'd say yes, he'll go into some kind of technology.

F—And [girls name removed] will completely stay away from it?

L—[girls name removed] is, yeah she'd be more like me. She'd be more into design. If she were to combine it maybe. Even something like civil engineering, other than that she likes more anything designing and artistic and music and just all the arts. So unless she's able to combine it with something else.

F—So do you think it's more of a gender psychology, than there being any factors that are preventing women going towards technology?

L—I think we'll see a change in the next generation. I think there will be more now than there would have been 10 years ago. So I think we will see a change. I'd like to think I haven't done anything in the way I have raised my children, I mean they are both equally exposed, they both each have their own system that they can go into. So I hope it's not something that I have done. I don't know, I don't know if it's just their personalities or if it has to do with their gender.

F—Ok, and so then in that case, do you think there are political or socio-economic factors that you think could be either impacting to reduce the gap or widen the gap?

L—I can't, I'm just thinking of my own experience and the people around me and I couldn't say, because if you have children of both sexes that growing up pretty much the same, and I can understand that some households the parents might not be as technical as my children are growing up with parents, so no

F—Ok, the final question. You have said that maybe the environment, the fact that it's a 24x7 operation and the fact that it's so technical, that could be why there are no women, certainly in the 24x7 team. Is there anything that you see that could be done that promote women or make it easier for them to work downstairs?

I—24x7 would typically get their candidates from the other teams, so you would have to work on getting more women on the other teams, so that we would have a bigger pool of them moving into ours. I would like to think that we already give a pretty good work life balance on that team despite the fact that it's out of hours, but I think we'd have to work on the other teams getting more women. Can we do something on the other teams? I'm not sure. I'm just wondering about the recruiting process. Are we may be rather than looking at only the experience because we get CVs based on the experience that they have, could we may be look at just aptitude rather, you know the ability to learn the technical stuff rather than you already have experience on this so you would make a good candidate. So I think just may be opening the criteria for the initial recruitment might help.

Interview 5

F – So, we'll start by asking what your nationality is and where did you grow up?

I – I'm Irish and I grew up in Bray, County Wicklow.

F – And are you from a large family?

I – I have three brothers and no sisters.

Are you the youngest or the oldest?

I – I'm the second oldest.

And did you go to school or college in the area of Bray?

I – I went to Loretto in Bray and Loretto Business College in Stephens Green, following that I did a business diploma in DunLaoighre senior college as well an additional Information Technology training course back in Loretto Business College as a separate course.

F – So that Information technology course, you didn't follow that up in regards to technical field work in your career?

I – No at the time I was so focused, obviously dating back to the year that it was, circa 1996, it was really focused around Microsoft. So it was not something you would really bring into an IT company, it was just more of an enhancement for a CV for an administrative job.

F – Ok, Just in regards to school. Were you in an all-girls school or a mixed school?

I – All Girls

F – And were there any technology related subjects you took in primary or secondary school?

I – No, there wasn't any that were available in school at that time, it was more the usual maths, biology, home economics, languages and those types of subjects

F – So how did you come to join Company X?

I – Actually I started in customer care then moved to sales later on before joining the technical end of the business

F – Oh, so all about customers before now and not really about the technology itself?

I – Absolutely, yes.

F – Recently you have transitioned into a technical area in the business. Moving in and also dealing with sales you would somewhat have some sort of technical experience. You have probably developed your technical skills?

I – I have yes.

F – So looking back would you, if you were going back to college now, would you consider that area as a career?

I – Absolutely yes. I have actually looked into doing a masters. It will be in IT and business, and potentially starting next September, not this year but next September. So yes, it would have evolved from working with customers in customers care and obviously seeing the back end of things. I then moved into Operations and enhancing the customer experience, but then moved into sales. So it was probably really in sales, in you know, getting to work with IT departments on a daily basis that I really developed an aptitude to want to learn more and continue to progress career in the IT part of the business.

F – Ok, and so I personally would not really consider myself technical even though I work in a technical role. Would you consider yourself a technical person?

I – Em. I wouldn't consider myself as a technical person, but I am technically aware of the infrastructure, architecture and how that works within the business and what's required to make that work.

F – And growing up, where you ever interested in technology. Obviously you went into more of a business management area of study, was technology ever an option for you?

I – No, and I wouldn't have thought it at the time either.

F – And your siblings, were they ever interested in technology?

I – No, obviously when we were growing up, mobile phones were the new technology out at the time. My brothers wouldn't be game players or anything like that.

F – So you wouldn't consider yourself to have been exposed to technology?

I – No

F – So then, just in regards to the floor downstairs. There is a huge gender gap. What do you think are the main drivers of that?

I – A lack of understanding of the environment we work in. A lack of understanding as to what is required in the IT space. Maybe, I don't know what's out there in the schools at the moment, I know certainly from a [Company name removed] perspective we have a team of people who go out there to educate and explain that not all IT individuals are geeks. And you can come in and grow your skillset within IT businesses on an initial business degree or an IT degree.

F – Is there anything external to the company, macro environmental factors like culture or society? Is there anything there that you think is having an effect at either widening the gap or causing the gap to now, or which has started to narrow the gap?

I – Em, no. I think that there needs to be a much bigger presence and understanding of it through secondary school. That potentially will come now that they have started implementing iPads as a device and obviously whiteboard software potentially. But I do feel that there should be a subject that would open people's eyes up, even if it was brought in at a fifth and sixth year level, not necessarily at first, second or third year level.

F – Other than that, within the business at the moment, what do you think we could do to lessen the gap?

I – A little bit more along the lines of what Company X did in the grad program, which was going out and educating people on actually the people that we do have within the business and how successful they've been, where they've come from and how they evolved from that through joining an IT company.

Interview 6

F – If I could start and I could ask you what your nationality is and where you grew up?

I – Irish and I grew up in Athlone.

F – Ok, and were you from a large family?

I – Yes

F – Ok, and did you go to school or college in the area you grew up?

I – Primary school there and secondary school in Carlow IT

F – And, was it a mixed school?

I – No, all girls. It was a convent school

F – And in school, primary or secondary, did you have a lot of classes that were technology based, or how did you find the actual classes?

I – Em.. no but there was, up until probably into transition year, there was 1 IT class, maybe 2 hours per week max.

F – And would you find that drove you into the area of study you went into or what?

I – It was an opening of the door, I would describe it as that, and from there the interest grew. And it was a female actually that ran class as well.

F – Ok right. Was there anything in regards to your family, was there any exposure there?

I – Absolutely not, no.

F – None

I – No definitely not, I would describe it as a new area and it was at the time, it was seen as a market area. I did my leaving cert in 99 and IT was definitely a growing field.

F – Ok, and was your main driver rather than your family, you were probably the first to go into technology.

I – Absolutely yes

F – So then going into college, did you notice any kind of gender gap in that area in college?

I – Huge yes. We started probably 2 classes in first year, I would say maybe 90% males, for sure. And they'd dwindle down very quickly to 1 class but again the ratios were up there as much as 85% male.

F – And going down to 1 class is that because people were dropping out?

I – Yes

F – Did you start here straight away after college?

I – No, I finished college and I went and worked on a helpdesk, a technical support helpdesk and a company called [company name removed] and I worked there for a year. Basically a complete wide range of, a small to medium sized businesses, a small range of products. I started there and worked my way then to sys admin after 12 months in another company, where it was a bigger organisation but at that stage I was stand alone, working in there on my own. But then as well in [company name removed] I was the only female in the tech department, working with 6 other people.

F – Ok, and then coming here it's not much of a difference really in regards to the ratio of women to men.

I – Yes, initially starting here in server, I think there were 4 females up in the team and the rest were all male. The numbers there I wouldn't even count. I've come back to the [product name removed] team and there are a lot more females in the team for sure but still you are looking at 70% male.

F – In your opinion do you see anything up there that could be contributing to causing the gap, both in [company name removed] and externally.

I – I think externally, I think it's perceived just as more a male industry, but it's not the only one. Architecture, engineering they're all the same. I'm not sure what's to be done there.

Here, I think they really are pushing for a work life balance to suit women. It's one of the best I've ever seen, and people I've gone to college with don't have the same flexibility by any stretch. So for here they've a real niche in that, so that is good. So they are pushing it but they still need to get people through the door.

F – And what do you think they could do to get people through the door?

I – I don't think they advertise as much the flexibility on work. In the sense that we have 24x7 shifts, we have weekend shifts, we've different options there. They are all a massive pull once you start a family, but then once you come back at a stage where you don't have a young family then you can come back and maybe be more career driven again if that's where you want to go. It has a great scope here, maybe publishing it enough. But then if you don't ask you'll never know.

F – Someone else who I interviewed had one girl and one boy. You're the same, I know they're very young, but do you notice any difference now? I know hers were quite a bit older, 11 and 9. But she noticed the boy was very interested in technology, setting up servers whereas the little girl was I like the computer so that I can look up fashion.

I – No mine are way too young for that personality to come out yet. I do know my little girl, who's 2, can already tell us the server is broken when her Elsa isn't on. It's Elsa that's not on that's the problem, and we've a media server up stairs, and that's the world we live in.

F – Going back to the influencers going towards technology. Obviously you said that the subjects in school opened the door, was there anything else that you can think of?

I – No it definitely was, it was the biggest growing market when I finished school. It was the area where there were ample jobs here. I was always logic driven, so maths would have been a strong subject. Anything logical. I would never have excelled in a business environment. This was definitely more an area because it's practical which suited me. No creativity what so ever. Take a ruler out to draw a line, that's me. My sister did my junior cert art project and she was 4 years younger than me, because my teacher told me I was that bad.

F – Final question. In your own opinion are there any macro-environment, political, economic, social or technical, forces that are maybe widening or reducing the gap for women going into the field of technology for study?

I – I think it is an area, if you think about it, you know when you start into it you see yourself working help desks, sys admin stuff like that. A lot of them are, looking at it now it's perceptive, depending on when you ask me its different things. It can be a very full on position, Company X is the only place where I haven't been phoned out of hours. They tend to be so people are so reliant on it that it's a necessity for you to be on call almost 24x7 and that's not a great work life balance. Company X is unique like that in that it doesn't do that, and other big companies like that. My husband works in the same industry and he is on call 24x7 and he's worked in multiple companies and it's always, been it's what's done, its what's needed, because systems go down, you stop earning. So I suppose it's the nature of the business, it's harder then for a female in that business, because it's not possible to be 24x7 or else your husband is at home, but then you've a bigger point there.

F – Towards education, are there any other areas you would recommend improving or looking at to reduce it?

I – I guess it's been a long time since I was in school so it's changed considerably, but you know, one class up to a certain period, you know up until transition year, is a tiny percentage of your weeks spent and your time spent in school. It could be increased, but that's all changed now they're starting to do their study now on their iPads and their Androids, culturally it's changed. There is already a change there, it's just a matter of brining that in across the board now, whatever way they do that.