

Understanding the Digital Transformation of SMEs in New Zealand

By

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Abstract

This thesis aims to investigate the process of digital transformation in small and medium enterprises (SMEs) in New Zealand. Through an in-depth analysis of literature, reports, and news articles, it has been highlighted that there is a digital lag in New Zealand despite its apparent benefits as there is limited digital adoption by businesses. This study aims to investigate the challenges contributing to this phenomenon and concurrently aims to understand the motivations behind the businesses that chose to adopt digital transformation. It not only attempts to explore this phenomenon through the perspective of owners/managers but also through the viewpoint of the employees; as employees' perspective on digital transformation has received limited attention in the literature. The researcher has adopted the qualitative research method using the interpretivism paradigm to answer the research questions of this thesis. Later, the data was gathered using case study method in which the researcher conducted semi-structured interviews with the participants and analysed using the thematic analysis approach. Through this study, it was found that competition, efficiency, and real-time scenarios are the major reasons for adopting digital transformation, whereas financial factors and human factors were the main challenges faced by these businesses. This research uncovers the expectations of the participants from the government that will enable these businesses to adopt digital transformation and accelerate the process. Additionally, this study concludes with the discussions of the findings along with its theoretical contributions and explores the practical and policy implications of this study.

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Chapter 1 – Introduction

This chapter briefly introduces the disruptive force of digitalisation on society and businesses, the need for digital transformation, and the digital transformation of small and medium-sized enterprises (SMEs) in New Zealand. It also states the primary aim of the research and the research questions.

The world has become digital, and the business environment is facing volatility, complexity, and uncertainty (Teichert, 2019). Almost all of the activities of a business are being digitalised which allows even the smallest firm to be present globally, conduct their business (Brieger et al., 2022; Neubert, 2018; Servais & Rasmussen, 2022), and fulfil the needs of customers that are ever-increasing. Hence, this new era of digitalisation has caused rapid shifts in the way we live and transact (Hoe, 2019). It has also been accompanied by an unprecedented pace of technological change (Liu & Vasarhelyi, 2014), confluence and fusion of physical as well as digital technologies (Poovendran, 2010; Schwab, 2017), and growing interconnectivity of machines (Lee et al., 2015; Strange & Zucchella, 2017) which are shaping the business landscapes, resulting in creation of various challenges and opportunities for firms and businesses (Barczak et al., 2022).

As digitalisation is becoming a major driver for innovation and competitiveness (Zimmermann, 2016), and as technology is maturing and ubiquitously penetrating the markets, there are fast and radical changes transpiring in society (Reis et al., 2018). Businesses around the world are feeling the pressure to align their strategies with technological changes, such as cloud computing, embedded designs, 3D printing, the Internet of things, and so on (Teichert, 2019).

According to Heyward (2021), digitalisation is not only an option but an essential weapon for firms that want to grow in a competitive world that demands efficiency and agility. This made it crucial for businesses to accelerate the adoption of digitalisation and transform their business processes.

1.1 Need for Digital Transformation

The digital-oriented activities used by companies for upgrading and for the transformation of existing technologies, products, and businesses to improve competitiveness are referred to as Digital transformation (Gilch & Sieweke, 2020). It can also be described as the integration of digital technologies into all the operations of the organisation that leads to infrastructural

changes, dictates how the organisation should be operated and delivers value to customers (McGrath & Maiye, 2010; Vial, 2019)

Kraus et al. (2021) note that digital transformation has become a necessity instead of a technical opportunity, that helps in managing the needs of the growing population, along with their expectations. It has also brought considerable changes in organisations by introducing various mechanisms and processes affecting how organisations conduct their businesses (Kraus et al., 2022).

According to scholars, research has hypothetically or empirically proved that digital transformation has had a positive impact on businesses by reducing the time and material spent on production, increasing labour productivity, and improving the quality of goods and services (Ghosh et al., 2022; Nguyen Thi Xuan & Nguyen Thanh, 2021; Zolkover et al., 2022).

1.2 Digital Transformation of SMEs in New Zealand

According to a report published by AlphaBeta (2021), if digital transformation is properly leveraged by the businesses in New Zealand, then by 2030, it could create an economic value of fourteen percent of the country's GDP which is equivalent to NZ\$46.6 billion. In this, the major beneficiaries would be manufacturing, healthcare, and government sectors.

However, in a survey, it has been identified that Kiwis are not positive about emerging technologies and its social and economic impact on the country (Technological change and the future of work., 2020). Yashiro et al. (2022) state that in New Zealand, a recent survey suggests that the use of advanced digital technologies is limited compared to other OECD countries. Even during the pandemic, when the performance difference was clear between enterprises using digital tools and ones that did not, there has been no significant increase in the use of digital tools. Only basic services are adopted by SMEs compared to large firms, and the gap only increases as technology becomes more sophisticated (OECD, 2021).

Yashiro et al (2022) also state that according to OECD (2019), despite the benefits reaped by digital tools, SMEs are lagging in digital transformation and its' practices. Firms in New Zealand are using less advanced digital technologies compared to other OECD countries (Yashiro et al., 2022). For instance, 80% of businesses in the U.S. use at least one cloud-based system compared to New Zealand, where only 20% use the system (Kea, n.d.). Hence,

there is cynicism surrounding digital transformation in New Zealand (AlphaBeta, 2021). It is important to understand the reasons behind the hurdles in the adoption of digitalisation.

1.3 Research Questions:

The overall objective of the thesis analyse how digital transformation is taking place in SMEs in New Zealand and identify the hurdles which delay the process and causes scepticism in the minds of stakeholders. Hence, the research questions that this thesis seeks to answer are:

1. What factors influence the digital transformation of SMEs in New Zealand?
2. What are the challenges faced by SMEs during the transformation?

This thesis is set across 5 chapters including the introduction of the paper. The introduction chapter has not only given a brief overview of the thesis and explained the current scenario of the digital world, but it has also explained the situation of digitalisation in New Zealand.

Chapter two discusses the literature surrounding digital transformation, key concepts, and research gap and justification which will provide the context for the research question.

Chapter three discusses the research design adopted by the researcher, the research method, the data analysis process, and ethical considerations. Chapter four discusses the findings of the analysis of the cases and the limitations faced by the researcher. Chapter five concludes the thesis.

Chapter 2 – Literature Review

The following sections review various literatures on digital transformation, digital maturity, digital capability, and digital leadership. This review explores these various concepts as it sets the context for this study. The review later explores various literature regarding digital transformation in New Zealand and why this study focuses on the manufacturing sector for the thesis. It also highlights the gaps that exist in the literature, justification for the research questions, and addresses how this study aims to answer them.

2.1 Digital transformation

In-depth knowledge about digital transformation has been provided by scholars in various fields for many years, for example, education (Jackson, 2019), health care (Ricciardi et al., 2019), production (Llopis-Albert et al., 2021) and services (Diener & Špaček, 2021).

However, despite this attention, there is a struggle to reach a consensus definition (Osmundsen et al., 2018; Zhang et al., 2022). Vial (2019) states that digital transformation is a process where organisations are triggered to respond strategically through digital technologies such as computing, communication, and information, changing their structures and boundaries and realise the process of enterprise entity evolution.

Whereas Huang et al (2021) believe that digital transformation is a process whereby major changes are set off in the characteristics of the organisation. It also triggers changes in organisational structure, behaviour as well as the operating system by applying information technologies. Gökalp and Martinez (2021) define digital transformation as a disruptive technology that brings new business models and operating models to all sectors.

2.1.1 Definition

The definition adopted for this thesis is mentioned by Fitzgerald et al. (2014) who state that digital transformation is the use of digital technologies in order to achieve significant advancements in business, optimize operational processes, improve customer experience, and develop new business models. This definition is not only comprehensive and aligns with the objectives of the thesis, but it also provides a holistic understanding of the concept and is adopted from the study that is extensively referenced.

Digital transformation is more than just a technological shift (Henriette et al., 2015), and apart from the technology, it requires other factors like alignment of strategies, people and culture, leadership, mindset, and talent development (Goran et al., 2017). By considering

these multi-faceted dimensions of the concept, the above definition has been adopted for the study.

2.1.2 Digital transformation evolution

Previously, digital transformation was synonymously misused with digitisation and digitalisation (Gong & Ribiere, 2021). However, Verhoef et al. (2021) mention that the digital transformation process is comprised of three phases, i.e., digitisation, digitalisation, and digital transformation. Digitisation as defined by Bloomberg (2018, p. 2) “essentially refers to taking analog information and encoding it into zeroes and ones so that computers can store, process, and transmit such information” Whereas digitalisation is defined as a pace of change driven by digital technology, that occurs in society and involves multiple technologies at different stages of maturity (McAfee, 2009). According to Gong and Ribiere (2021), digitisation, digitalisation, and digital transformation are concepts that are interconnected but at a conceptual level, they should be well defined.

According to Ulas (2019), Digital transformation should not be restricted to technological leap which focuses on software and hardware updates, but it is about adapting institutional as well as operational ecosystems in the organisation. It is the re-arrangement of technology, business models, and processes, in this constantly developing digital economy, which creates values not only for customers but also for employees. It is anchored in digital technologies such as cloud computing, artificial intelligence, blockchain, and so on; that empower enterprises and assist them in developing new products and services (Teng et al., 2022).

2.1.3 Digital transformation for company performance.

Teng et al. (2022) investigated the relationship between digital transformation and SME performance through empirical analysis. They investigate the current stage of transformation of SMEs in China and find out the influencing factors from the enterprise perspective that leads to digital transformation. The results of their study show a positive correlation between digital transformation and operational performance, and it analyses the benefits and the cost of digital transformation of SMEs. However, their paper focuses only on the listed SMEs in China’s Shanghai and Shenzhen markets.

A study conducted by Guo et al. (2023) on digital transformation and improvement of firms’ performance, shows that although digital transformation can substantially increase the total factor productivity, it does lead to an increase in operational cost and managerial expenses, hence decreasing the firm performance. Guo et al. (2023) show that instead of high or low

digital transformation, the firms need to median digital transformation to improve the firm performance. It also states that the enterprise that is more labour intensive, the more negative is the effect of digital transformation on the firm's performance. They conclude that although digital transformation is decreasing the firm performance, it is still recommended to go through the process as it will help the firm's performance in the long term.

Hortovanyi et al. (2023) state that the digital transformation of firms, especially manufacturing firms is a major organisational challenge as they have low success rates. In order to tackle this problem, Bibby and Dehe (2018) suggest that firms that want to pursue transformation should start by understanding the maturity level that the firm has and determine which areas are the firm's strengths and weaknesses. Scholars have suggested that some manufacturing firms neither have the capability nor the understanding of how to assess their progress in digital transformation (Erol et al., 2016; Hortovanyi et al., 2023; Lucato et al., 2019)

2.2 Digital Maturity

As mentioned in section 2.1.1, digital transformation takes place when the company transforms its traditional resources by adopting digital technologies, and digital maturity acts as a clear lens to track the transformation (Rader, 2019; Robertson et al., 2022). Digital maturity is continuous and ongoing adaptation process to a digital landscape that is always changing (Kane et al., 2017).

Rader (2019) states that Digital Maturity is the application of digital technology to promote efficiency and innovate business models in a creative way along with the operations that continue to evolve and grow. von Leipzig et al. (2017) state that digital transformation and digital maturity are often interchanged and used without considering the differences between these terminologies. However, digital maturity is a systematic way in order to transform the organisation digitally (Kane et al., 2017). Digital Maturity actually reflects the degree to which the company has digitally transformed.

According to Westerman et al. (2012), Digital Maturity is a combination of digital intensity and transformation management intensity. The firm that is digitally intense will invest in technology-enabled initiatives, which are meant to change the operations of the company, and the digital transformation intensity refers to the investment in digital leadership capabilities which are needed to create the transformation within the organisation. They also mention that firms can have four levels of digital maturity, consisting of digital beginners, digital

fashionistas, digital conservatives, and Digirati. Examining on seminal paper by Westerman et al. (2012), Robertson et al. (2022) state that, digital maturity is a measure of digital capabilities (Hagberg et al., 2016; O'Hea, 2011) and its digital leadership (Rossmann, 2018).

Further, Rossmann (2018) mentions that when firms that have mature digital capabilities, but weak leadership capabilities are described as fashionistas. On the other hand, firms that have mature leadership capabilities and weak digital capabilities are termed as conservatives.

Digital beginners are mostly unaware of the opportunities or may be investing truly little without effective transformation management. Whereas Digirati combines transformative vision with sufficient investments, (Westerman et al., 2012) meaning they combine both digital and leadership capabilities. Hence, to achieve “digital mastery” both types of capabilities need to be developed.

2.3 Digital Capability

Scholars suggest that there is a need for a proper definition of digital capabilities since it has been poorly described in the literature (Freitas Junior et al., 2016; Freitas Junior, 2017; Korhonen & Gill, 2018). Most of the definitions are created from the dynamic capabilities perspective (Wang et al., 2022). However, there is a consensus, that digital capabilities are not just limited to IT skills (Westerman et al., 2012) but also involve digital assets, and value is created through digital outcomes (Sandberg, 2014; Srivastava & Shainesh, 2015).

Korhonen and Gill (2018) define digital capabilities as, an “enterprise’s capacity to integrate and utilize digital data and information technologies in its products, services, business processes, and organizational systems and practices to create added value for its constituents and beneficiaries”. Wang et al (2022) talk about digital capabilities as, “The high-level capability of a company to leverage intelligent, connected products and data analytics to facilitate the development and delivery of services and products to create differentiated value.”

Annarelli et al. (2021, p. 8) define digital capabilities as, “organizational capabilities that allow firms to pervasively combine digital assets and business resources, and leverage digital networks, to innovate products, services, and processes for organizational learning and customer value creation and manage innovation for ensuring sustained competitive advantage”. Their research aptly notes that the foundations of digital capabilities mainly come from IT-based industries and mostly pertain to information systems management.

Hirvonen and Majuri (2020) conducted a study on manufacturing SMEs in Finland and used the Digi-Mat method to assess the SMEs' strengths and weaknesses in terms of digital capabilities. Freitas Junior et al. (2016) also conducted research through interviews and surveys of enterprises on digital capabilities and their relation to business models. It was validated that digital capabilities do help in improving the digital business model; however, their study was limited to only e-commerce.

The impact of digital capabilities on manufacturing companies in China was studied by Wang et al (2022). They state that due to competition in the market, there is a need for technologically superior products to be created by manufacturing companies. They propose a research model based on a dynamic capability view and investigate digital capability, value co-creation, company performance, and digital innovation. Their empirical study shows that digital capabilities have a positive impact on companies' performance. However, their study is only limited to 209 companies which are a mix of SMEs as well as large companies and they have not specified the dimensions of performance. Also, in their research, only half of the companies had completed the digital transformation.

An empirical analysis conducted by de Vasconcellos et al. (2021), has found that Digital transformation acts as a precursor to the formation of digital capabilities, and formulation and implementation of digital strategies usually accompany the transformation. Another research done by Proksch et al. (2021), states that having a digital strategy does not suffice if the enterprise wishes to achieve high digitalisation, but it is also mediated by digital capabilities.

2.4 Digital Leadership

Modern businesses are requiring a new type of leadership that can thrive in a digital environment and is characterised by high-tech skills which lead to optimal team management and collaboration (Abbu & Gopalakrishna, 2021; Bresciani et al., 2021) and hence digital leadership comes into the picture (Zhu et al., 2022). Digital leadership is the ability of the leader to create a clear and meaningful vision for the digitalisation process and has the capability to actualise the strategies (Araujo et al., 2021).

Oberer and Erkollar (2018) state that digital leadership is considered a fast cooperative leadership style that is cross-hierarchical and team-oriented and keeps its focus on innovation. It is argued that digital leaders are creative thinkers and have foresight (Klein, 2020) and play a key role in promoting employee creativity (Mihardjo et al., 2019). These

leaders have the ability to articulate a transformational vision and possess forwards looking perspective of a digital future (Zhu et al., 2022).

Sasmoko et al. (2019) study the relationship between digital leadership and innovation capability and find that they are positively related and also state that digital leadership significantly influences market orientation and dynamic capabilities. Mihardjo et al (2019) state that digital leadership has a direct as well as indirect impact on customer experience orientation in developing business model innovation. Zhu et al (2022) examined the relationship between employee creativity and digital leadership and proved that digital leadership does improve employees' creativity.

2.5 Digital transformation in New Zealand

As previously mentioned, ninety-nine percent of the businesses in New Zealand are SMEs that contribute heavily to the country's GDP (Lewis & Cassells, 2010; OECDiLibrary, 2018) and have been termed as key drivers of recovery from Covid, however, these SMEs have shown a digital lag despite some of the existing government initiatives; for instance Digital Boost programme (MYOB, 2022). According to NZIER (2023), the digital competitiveness of New Zealand has fallen behind in the categories like technology, knowledge, and future readiness. The report also found that if twenty percent of businesses in New Zealand invested in cloud-based digital tools, the country would have economic benefits such increase in GDP, increased household spending, and exports. Another study by MYOB (2022) states that if businesses invested \$100 in digital tools for one or two activities, they would see returns of at least \$240.

In this light of digital deficiency, some scholars have tried to study the concept of digital transformation in New Zealand under different aspects. Hamzeh et al. (2018), conduct a survey on manufacturing SMEs in New Zealand who are implementing Industry 4.0 in their organisation to upgrade their existing processes. Based on the findings, they have proposed a model for the implementation of Industry 4.0 in order to give a well-structured road map to manufacturing companies. However, this study is conducted only amongst fifty participants (out of which only forty-three responded) from the directory of the New Zealand Manufacturers and Exporters Association (NZMEA). Hence, the data obtained is restricted and can lead to an increased margin of error.

Sirisukha (2020) examines the impact of digital transformation strategies on organisations through a literature review. He examines the impact that resource capability, cultural

capability, and process capability have on organisations and to get identify issues and challenges of digital transformation faced by the organisations. Through the paper, the researcher not only intended to provide theoretical insights on how IT can generate value but also develop promising interventions to promote digital transformation competence. His paper has adopted a capability-driven approach to the subject of digital transformation. The author however does not address the specific challenges or address the different areas of problem faced by the organisations and is only limited to providing theoretical insights.

In a paper written by Simmonds (2022), the author discusses digital transformation in government in New Zealand through the application of an ecosystem perspective. It carries out an in-depth case study of the public sector in New Zealand to examine how governance mechanisms facilitate intricate socio-technical configurations of people, relationships, culture, and technology. He states that in order to enable collaborative value creation, ecosystem structure, and governance play a significant role. However, this study is only limited towards the public sector and does not focus on businesses in New Zealand.

2.6 Gaps and justification

The literature review has identified several areas that have been researched in the past. For instance, studies have been conducted in the past regarding the economic contributions of digital technologies in New Zealand along with research on job creation and productivity impacts of specific technologies (Alphabeta, 2021). Also, “Better for business,” a group within the Ministry of Business, Innovation and Employment's (MBIE) Te Whakatairanga Service Delivery group has researched on understanding the Digital capability of New Zealand businesses. However, there is limited research regarding the factors that influence the digital transformation of SMEs in New Zealand. I suggest that although various research has been conducted around the world regarding digital transformation, there exists a gap, regarding such research being conducted in the context of New Zealand manufacturing SMEs. This study intends to bridge this gap.

It is also important to address gaps regarding how digital transformation impacts employees and the challenges faced by them. Kane (2019, p.48) states that “the most successful digital transformation starts with a shift in mindset at employee, leadership, and organisation levels”. Various research has been conducted with regard to digital leadership and digital capabilities, however, it is crucial to understand how it affects the employees of the organisation which has been insufficiently addressed (Cioppi et al., 2023). Van Der Schaft et al. (2022) do study

the employees' experience during digital transformation; however, it is conducted in the context of "sense-making" and is done in the field of hospitality and tourism. This study is conducted to understand the mindset of the employees and the barriers they face during the process of transformation in the manufacturing industry as the researcher believes that the employees of the organisation are an essential part of the transformation, and it is imperative to understand their thought process for smoother transition (Cetindamar Kozanoglu & Abedin, 2021).

The literature review has also highlighted the need for qualitative investigation. The previous studies on digital transformation in New Zealand that are conducted are quantitative in nature, for example, reports drafted by Betterforbusiness (2021) and AlphaBeta (2021) have conducted surveys in New Zealand. However, there is a need to understand the complex interplay of factors that affect the transformation process, and the researcher believes that qualitative research will be best suited to understand these intricacies and uncover the motivating reasons and obstacles faced during digital transformation.

2.7 Summary

The literature review in the study has provided summaries of numerous studies that have been conducted for understanding not only digital transformation but also of related concepts. It has examined the literature on digital transformation, its definition, and the evolution of terminology, followed by digital maturity, digital capabilities, and digital leadership. This literature has also discussed the digital transformation in New Zealand and indicates that there is a significant gap in digital transformation research in the context of New Zealand and also of employees' perspectives. It has also informed the researcher of the necessity of using qualitative methods for this study.

Chapter 3- Research Design

3.1 Introduction

Digital transformation has caused profound changes in society as well as various industries, by means of digital technologies (Agarwal et al., 2010, p. 82; Majchrzak et al., 2016).

According to Vial (2019), if businesses want to maintain their competitive edge, then they must solve the puzzle of technology and use it effectively. However, as mentioned in the previous section, SMEs in New Zealand have limited digital technology compared to other OECD countries (Yashiro et al., 2022). Therefore, this study aims to investigate the motivation factors as well as the hurdles faced by SMEs in New Zealand.

This chapter discusses the research strategy chosen and the reasoning behind the choices made for the research method. Alharahsheh and Pius (2020) state that research methods are related to the collection of techniques that the researcher uses to develop knowledge and data. This chapter starts with the philosophical assumptions of the researcher and describes the research paradigm of the study. It later delves into the interpretivist approach as well as the justification for the qualitative method. Additionally, it gives an overview of the cases chosen and the method used for data analysis.

3.2 Research paradigm and justification for qualitative method

According to Jonker and Pennink (2010), a research paradigm is a collection of assumptions and beliefs that are fundamental in nature, with regard to the understanding of the world. It serves as a thinking framework that shapes and guides the behaviour of the researcher.

Wahyuni (2012) states that even though in most studies the philosophical backgrounds are implicit, some scholars emphasise the importance of initial questioning of the research paradigm while conducting research as it influences how the researcher undertakes the study.

In order to distinguish the existing research paradigms, there are two main philosophical dimensions, i.e. ontology and epistemology (Kalof & Dan, 2008; Saunders et al., 2009).

Ontology refers to the “nature of knowledge” (Wahyuni, 2012, p. 69) or the “nature of reality” (Saunders et al., 2009). It prompts inquiries into the assumptions that researchers have about the functioning of the world and their dedication to their views (Saunders et al., 2009). It not only influences how the researcher frames the research question but also which investigation methods need to be adopted and their potential practical implications (Al-

Amoudi & O'Mahoney, 2015). The researcher has adopted the “research onion model” by Saunders et al. (2009) during the process of this research.

3.2.1 Interpretivism

In this study, it was crucial to understand the different perspectives and opinions of the interviewees, along with their culture and circumstances of the business. Such differences are considered by interpretivism (Alharahsheh & Pius, 2020) as the goal is to understand the individual's interpretations and not to discover universal and value-free knowledge (Rehman & Alharthi, 2016). Hence, it was fitting that such a stance was adopted for this study.

According to Grix (2004, p. 82), interpretivism is a “response to the over-dominance of positivism”. Rehman and Alharthi (2016) state that in this philosophy, the notion that a single, verifiable reality that is independent of our senses can exist is rejected and believes in multiple realities that exist in a social construct (Guba & Lincoln, 1994; Scotland, 2012). In this ontology, reality and truth are created instead of being discovered and since our reality is mediated through the senses, it is not possible to know it (Rehman & Alharthi, 2016). In this methodology, events do not have a simple interpretation but are understood by uncovering various layers and thus the research questions are broad (Scotland, 2012).

The methods adopted in interpretivism provide valuable insights regarding human behaviour and give explanations for participants' perspectives without dominating the participants (Scotland, 2012). Cohen et al. (2007) talk about the importance of the interpretivist approach and mention that it necessitates the understanding of social phenomena from the participant's point of view rather than the lens' of the researcher. The researchers adopting interpretivism employ methods that generate qualitative data (Rehman & Alharthi, 2016).

3.2.2 Qualitative method

In order to answer the research questions in this study it was important to adopt methods that would enable the researcher to understand the relationship of participants to their circumstances, and the role of the participants in value creation, hence the researcher adopted the qualitative method rather than methods that would offer objective or precise information (Thanh & Thanh, 2015). In order to construct and develop theories, qualitative methods are useful (Coast, 1999; Sofaer, 1999). Lincoln (1992, p. 376) asserts that qualitative methods “attempts to grasp phenomena in some holistic way or to understand a phenomenon within its own context or to emphasise the immersion in and comprehension of human meaning ascribed to some set of circumstances or phenomena.” Coast (1999) states that to carry the

qualitative method, there needs to be an interaction between the researcher and the participant, and during the research process, the researcher should be open to the views of the world. The adoption of this method will provide contextual insights and will give an understanding of the “what” in the research question (O’Donnell & Cummins, 1999).

3.3 Case study research

Case study is described by Yin (1992), as an empirical inquiry that investigates a contemporary phenomenon in the context of real life. This is done when the boundaries of the phenomenon and context are not clearly defined, and the researcher uses multiple sources of evidence (Noor, 2008). He also mentions that case study research methods are used to conduct an exploratory inquiry. Since this research required exploration and an understanding of the complex issue along with a holistic and in-depth investigation (Zainal, 2007), the researcher adopted this robust research method.

Zainal (2007) states that case study methods receive a lot of criticism for their lack of robustness and therefore, the researcher should carefully craft the design of case study methods. Depending on the research question, the researcher can adopt either a single case study or multiple case study methods. In this study, the researcher has adopted a multiple case study method, and the data has been analysed collectively, therefore, using the combined information. Multiple case design is used by the researcher when it is believed that a particular phenomenon exists in various situations (Yin, 1981). Yin (1994) mentions that instead of treating multiple cases as multiple respondents in a survey, it should be treated as multiple experiments. Kompier et al. (2000) add to this stating that the multiple case studies do not represent a sample and hence multiple case study method is not a method for statistical generalization. The multiple case study method is only generalizable to the proposed theory and not to the population. Arena et al. (2006) state that there are concerns that the case study method for a particular situation does not provide generalize results, however, the researcher has adopted this method for this study to get a holistic understanding of digital transformation in New Zealand from multiple cases. This method provided for richer and in-depth understanding that was needed to answer the research question.

3.4 Selecting Cases

According to Seawright and Gerring (2008) selecting a case is a fundamental task undertaken by the researcher and selecting good cases for a small sample is an endeavour that is notably challenging. Unlike in quantitative sampling, the cases in case study research are specifically

chosen, as the case is of interest (Stake, 2013) or it is chosen due to theoretical reasons (Eisenhardt & Graebner, 2007). This section discusses the researcher's selection process for this study.

3.4.1 Manufacturing SMEs

The researcher has chosen small and medium enterprises as the research focus. SMEs contribute significantly in terms of employment, output, GDP, and exports (Keskgn et al., 2010) in both developed and developing countries, but they are facing hurdles and threats that are stunting their growth and need to be addressed and resolved (Lin et al., 2022). In New Zealand, ninety-nine percent of businesses are SMEs and employ 42.6 percent of Kiwi workers, and generate more than a quarter of economic output (OECDiLibrary, 2018). They are considered the backbone of the New Zealand economy, and choosing SMEs as cases will give a better overview of the hurdles faced by businesses in the country during digital transformation.

In New Zealand, while the definition of SME is not official, the generally accepted definition is by the number of employees, which ranges from 0-20 employees for small businesses and from 20 – 100 employees for medium businesses (OECDiLibrary, 2018). Although some define medium as no more than 49 employees (Naudé, 2022; Roberts, 2021). Due to the presence of a large number of SMEs in the country, the researcher decided to focus only on manufacturing industries as it is not only diverse and innovative but also account for half of the total exports in the country (MBIE, 2018). This sector is undergoing digital transformation through initiatives taken by the government such as the “Advanced Manufacturing Industry Transformation Plan” in order to increase productivity, better wage jobs, and a low emissions sector (MBIE, 2022). However, due to globalisation and changes in technology, the structure of manufacturing businesses has significantly changed. This has resulted in an expansion of potential for some businesses while declining for others. According to Alphabeta (2021), there is still cynicism surrounding digital transformation in New Zealand.

3.4.2 Purposeful sampling of cases

The researcher used purposeful sampling for this study. It is one of the widely used techniques in qualitative research that is used for identifying and selecting cases that are rich with information, especially when the resource for finding data is limited (Palinkas et al., 2015; Patton, 2002). The researcher needed to find individuals from businesses that are

knowledgeable and experienced in the field of manufacturing and are going through some degree of digital transformation in the organisation. Hence, purposeful sampling seemed appropriate for this study.

Within purposeful sampling, there are various methods that can be adopted, from which the consecutive sampling method was adopted. According to Naderifar et al. (2017) in this method, each subject who meets the criteria is selected till the researcher reaches the required sample size, as opposed to selecting a fixed sample. Within the consecutive sampling, the researcher implemented snowball sampling; which is a non-probability method, which is implemented when the members of the population cannot be easily accessed. In this, the researcher first identifies the first group of people, who later recommend similar cases for study. It was important that a careful selection of research samples was conducted since the purpose of qualitative research is to gain a deep understanding of a phenomenon rather than generalizability (Naderifar et al., 2017).

The process of selecting the cases was conducted from the month of December 2022 to February 2023. The researcher first approached the support team of the “Digital Boost” programme which is a government-funded programme that offers digital support to small business owners (Business Owners, 2021) who want to speed up their digital transformation. A request was made to recommend businesses that would be interested in participating in this research. There were three criteria mentioned for the selection. Firstly, they needed to be an SME, secondly, they needed to be a manufacturing business, and third, they needed to be undergoing or thinking of undergoing a process of transforming their business digitally. However, the researcher was faced with a lack of positive responses, and hence, alternative sources were pursued.

The researcher independently researched businesses online and subsequently approached them through email. However, the response was still weak and hence the researcher decided to attend a seminar of Smart Factory Showcase in Christchurch to make connections with businesses. This would also assure that the businesses approached are actively looking for ways to transform their business digitally by introducing the latest technology. The researcher also contacted professors, individuals at the Centre for Entrepreneurship, and students in the university for recommendations of businesses who would be interested in participating, and subsequently emails were sent out to those organisations along with an information sheet and consent form which would give an overview of the research being conducted and enable them

to give informed consent. Through these combined efforts, the researcher was able to find the following (Refer to Table 1) businesses for participation.

Table 1: Summary of research participants

Company name	Participants	Designation	Gender	Interview Length	Interview place	Business
C 1	I-1	General Manager	Male	18 minutes	Face to Face	Packaging supplies
	I-2	Supervisor	Male	22 minutes	Face to Face	
C 2	I-3	General Manager Operations	Male	20 minutes	Face to Face	Heating and cable equipment
	I-4	Project Lead, Quality and Compliance Manager	Male	20 minutes	Face to Face	
	I-5	NPD & NPI Engineer (employee)	Male	18 minutes	Face to Face	
	I-6	Quality Co-ordinator	Female	14 minutes	Face to Face	
C 3	I-7	Product Developer (employee)	Female	27 minutes	Online	Food manufacturer
C 4	I-8	Operations and Digital Technology Manager	Male	33 minutes	Online	Small Automotive parts
C 5	I-9	Business Development Manager	Female	20 minutes	Online	Exterior, Interior, and Vehicle Signage
	I-10	Managing director	Male	25 minutes	Online	

3.4.3 Semi-structured Interview

Since this was a qualitative study, semi-structured interviews were conducted as a technique for data collection. According to Taylor (2005), in qualitative research, interviews are the most commonly used data collection method and are appropriate for the researcher who wishes to understand the participants' experience and the understanding of the situation. It

gives the researcher the opportunity to explore with the participants more deeply, about their circumstances and probe into their accounts. It offers an excellent window, which enables the researcher to gain informants' perspectives on the issue or confirm insights and information that the researcher is already aware of (Garzoni et al., 2020). In this method, the researcher recognizes that the process of the interview will differ from participant to participant and will be influenced by what the participant has to say. Therefore, the interview conducted for this study was not standardized, which could be replicated but it was a semi-structured interview in which each discussion was unique, capturing participants' accounts of the experience and their beliefs.

The semi-structured interview started with the introduction of the interviewer and the interviewee followed by some casual chat. The purpose of the interview was mentioned to the interviewees and were also provided with an information sheet. As the researcher was conducting the semi-structured interview, there was no formal line of questions that needed to be maintained and the participants were steering the direction of the conversation, allowing them to focus on their topic of importance. The purpose of conducting the interview in a flexible manner was to allow the emergence of new questions during the interview. However, the researcher did provide prompts and subsequent questions to cover the necessary topics of research. The duration of the interview lasted anywhere from 14 minutes and 21 seconds to 33 minutes and 45 seconds and was conducted either face-to-face or via Zoom.

The interviews were recorded on a voice recording machine during face-to-face interviews, whereas during Zoom interviews, the interviews were recorded in the software itself. All audio recording was then transcribed and edited in Otter.ai software and sent to the participants for confirmation. The participants were allowed to make any changes they thought were important to the transcription.

3.5 Ethical Considerations

As per the University of Canterbury's Policy, the researcher submitted a Human Ethics Application which was then considered as low risk and hence was approved by the Human Research Ethics Committee. This is a necessary step in the university for protecting the rights of the participants and ensuring their welfare. The participants were also provided with the consent form and information sheet, to obtain their consent for the interview. These documents provided information to the participants about the purpose of the study and what participation in the interview entailed. It also mentioned the rights of the participants and

information regarding the protection of their data and anonymity. (Refer to appendix A and B)

3.6 Data Analysis Method

Yin (2003) states that data analysis is examining, categorizing, tabulating, and testing both qualitative and quantitative evidence, which addresses the initial study propositions. For the purpose of data analysis, the researcher used a thematic analysis approach. According to Alhojailan (2012), thematic analysis is appropriate for a study that seeks to discover through interpretations. It provides a systematic element and allows a researcher to analyse the frequency of the theme amongst the whole context. It not only confers accuracy but also intricacy and enhances the research's meaning. The thematic analysis illustrates the data in great detail with diverse subjects; finds relationships and quantifies qualitative data (Boyatzis, 1998). According to Braun et al. (2017), flexibility is the hallmark of thematic analysis; flexibility in terms of research question, sample size, data collection, and approaches to generate meanings (for instance either inductive or deductive approach).

The researcher has used a framework provided by Braun and Clarke (2006) to conduct the thematic analysis, the steps of which are as follows:

1. Becoming familiar with the data - The researcher will transcribe, read, and re-read the data and note down initial ideas. The researcher will familiarise herself with the data.
2. Generating initial codes – The researcher will generate an initial list of ideas and search for meanings and patterns which will allow the initial production of codes.
3. Searching for themes – After gathering the list of initial codes, the researcher will consider how different codes may form a theme that is overarching in the study. The researcher will make diagrams and use visual representations in order to sort different codes into a particular theme.
4. Reviewing for themes – The themes will be reviewed and may be grouped into higher-level categories if needed.
5. Defining and naming themes – After producing a satisfying thematic map, the themes will be defined by identifying the essence of each theme.
6. Producing the report – After having a full set of themes, a final analysis will be conducted, and the report will be drafted.

As stated in step one, after transcribing and editing the data, the interviews were read repeatedly, and the initial highlighting of the data was completed. This was done in order to

become familiar with data that was later used in the coding process. The coding process was iterative and cyclical in nature, was and done using a data analysis software called NVivo. The researcher first started with open coding, where any data that seems useful is categorised and labelled into a code. In this stage, various concepts were fragmented into seventy codes and labelled in an organised and systematic way. The examples of coding the data are shown in table 2.

Table 2: Example of the process of coding the data.

Examples from the Data	Codes
we try to accelerate technology and adopt technology where we can because we exist in a very competitive space	Competition
if there was a barrier to that, for any SME in New Zealand, I would say it is probably cost these days because businesses run small margins these days, particularly with escalating labour costs.	Cost
So, any digital tool set that is going to enable us to be faster, more profitable, and work more efficiently bake more quality into what we do, and we'll reach for, and we will pour resources into that	Efficiency
So, we have an Accredo. Software System, which is more of a.... it can add things into help with manufacturing, but it's not the best software system for manufacturing	Software
when I left school, I just left high school and straight into a job. So, since I've been here, I think we've got about 10 or 15 NCAA credits	Training

After the initial coding, the researcher looked for repetition and emergent themes and the existing codes were consolidated and labelled according to the emergent themes, an example of which has been provided in table 3.

Table 3: Example of consolidation of codes into themes

First order of codes	Second order of codes	Themes
Budget	Cost factor and Cost optimisation	Financial factor
Capital management		
Lack of capital		
Minimum wage		
Low profit margin	Subpar profitability	
Low return		
Age	Adaptability of employees	Human factor
Change resistant		
Employee resistance		
Evolving mindset		
Customised training	Training	
Upskill		

Since it was an iterative process, the transcribed interviews were referred to by the researcher again and again for refinement of themes. Once the researcher was satisfied with the previous processes, the codes were finally consolidated into the final four themes i.e., motivation for digital transformation, the financial factor, the human factor, and expectations of the participants from the government. These themes are discussed in-depth in chapter 5 of this study.

3.7 Summary

This chapter gives an in-depth review of the research design adopted by the researcher in this study. It has discussed the research paradigm of the researcher and given the justification of the qualitative approach for this study. The researcher has adopted the interpretivist approach and decided to use the multiple case study design. This chapter also gives justification for choosing manufacturing SMEs as sample size and discusses the process of selection. This chapter concludes with a discussion of the data analysis method and the process adopted by the researcher.

Chapter 4 – Findings

4.1 Introduction

This chapter discusses the findings that have resulted from the thematic analysis of the ten interviews conducted in this study. Through the analysis, reasons that influence SMEs to digitally transform their businesses along with the challenges have emerged. This chapter first discusses the motivations of the participants for adopting digital tools and technology and then addresses the challenges which are supported by the demonstrative quotes that are mentioned by the interviewees.

The challenges discussed below have been divided into two factors namely, financial factors and human factors that directly or indirectly create hurdles for the companies during the process of digital transformation. In the financial factor, the researcher has discussed how organisations manage their capital and resources in order to obtain upgrade their technologies or completely obtain a new one, along with the obstacles faced by them. This is followed by the discussion of human factors as the barrier to digital transformation. It discusses the management of human capital, addressing their apprehensions and constant need for upskilling to keep up with technology. It later concludes with a discussion of the expectations that the participants have from the government which can enable them to smoothly adapt to the changes in the industry.

4.2 Motivation for Digital Transformation

4.2.1 Competition

Masroor and Asim (2019) state that one of the biggest threats to the success of an organisation is competition as it reduces the profit and the market share in the industry. Hence, businesses in New Zealand are adopting technology to tackle the competition. The participants demonstrated an awareness that their competition was mainly from overseas countries like China which had the capability to mass produce at lower cost, unlike local businesses. As subject C-2 I-3 remarked, “Because from my experience, most of the products that I have been involved with over 25 years of manufacturing, have actually gone to China”. In order to face that competition, they realized that they needed to upgrade their technology and focus on niche products that cannot be automated overseas. They have also recognized that it was no longer an option to keep the processes manual and it would be more expensive for the business if they did not digitalise their process. As subject C-2 I-5 discussed,

“ And so it's, it's I think mixture of all the new technology if you're not up to the date with the technology, and you're not up to the scale with your skill set, in terms of all the labor in manufacturing, and all the processes and the standards that you need to follow in order to execute that product to the final stage that and where the problem starts. Because you won't be the leader in making that product”

Hence the participants are unequivocal about the importance of upgrading their technology not only for surviving overseas but also the local competition. As C-4 I-8 remarked that as a business, both employer and the employee need to understand the importance of digital technologies to “stay relevant and be successful.” As Jones et al. (2021) remark that digital technology has become an integral part of the business and it is a necessity to stay competitive.

4.2.2 Efficiency and Paper-based system.

During the process of interviews, it was observed that the participants were keen on adopting digital transformation not only to survive the competition but also to make their internal process more efficient. This would in turn help them make their product faster. Subject C-2 I-5 remarked that digitalization is essential for the purpose of efficiency. A similar observation has been made by subject C-1 I-2, who recognizes that digital transformation would bring about efficiencies and would help them obtain a lot of helpful data for their business.

Subject C-2 I-4 also states that the reason companies transform their processes digitally is to improve efficiency, but he also notes that his personal inclination to constantly learn new things also motivates him to be technologically savvy. In other words, personal curiosity and genuine enthusiasm do emerge as factors for adopting new technology. Another subject C-2 I-6 adds to this point and states that the mindset of the person for constantly adopting new technology is also a factor that influences digital transformation.

The businesses also want to transform their processes into digital ones to phase out their reliance on paper-based systems. Currently, some businesses are still paper-dependent as pointed out by subject C-1 I-2, “So small to medium-sized businesses, is trying to find someone in New Zealand that actually can implement that type of software system in to help. So, when you can see. Yeah, quite still heavily paper-driven process”. Subject C-2 I-4 shared that controlling documentation at every stage is a big issue in manufacturing, for example, if a procedure needed to be updated, the old paper had to be tracked down, re-typed into a new

one, and destroy the old copy. This whole process made it cumbersome for businesses to manage their documents.

4.2.3 Need for Real-time data

Another reason was stated by subject C-5 I-10, who discusses the desire to phase out the paper-based system and get digitalised to keep track of the progress of each job in real-time. He mentioned:

“We do we have digital online platform that everyone says, Yeah, but still have a piece of paper that everyone's been through the process. We haven't quite gone fully digital yet. The software can do it. We just haven't quite made that quantum leap. So, we still have that piece of paper that goes through the whole process.”

He also states that such a step for change would not only allow them to keep track of their processes but will also enable the customers to log in and check their progress. This factor seems to create an inclination for him to adopt more technology in his business process.

The above-stated reasons that motivate the participants to adopt digital transformation echo the findings of various other scholars. For instance, competitive advantage or competitive pressure, efficiency, and better productivity were found to be an influencing factor (Fosso Wamba et al., 2016; Hassan et al., 2017; Wong et al., 2020). In terms of real-time data, this finding also confirms the findings by Lee et al. (2017) that state that digital transformation helps in operation processes, process efficiency, and operations planning by giving the data response in real-time.

4.3 Challenges

This section discusses the challenges faced by the SMEs that were interviewed for this study. It first talks about the financial challenges and later discusses the human factors that act as a barrier to transformation.

4.3.1 Financial Factor

4.3.1.1 Cost factor and cost optimisation

Despite bringing tangible and intangible value to the organisation, digital transformation changes come at a certain cost (Reddy & Reinartz, 2017). It requires significant investments that need to be made upfront and not everyone has the capacity to afford it (Kissflow, 2023).

It was observed that the cost was a significant barrier to the participants due to various factors like small margins, the rising cost of labour, and the high cost of implementation. As subject C-4 I-8 describes below:

"...But I tell you, what, if there was a barrier to that, for any SME in New Zealand, I would say it's probably cost these days because businesses run small margins these days, particularly with escalating labour costs..."

He further adds that SMEs are “fearful of the cost of implementation and the dip in return” until the digital tool is running to its maximum potential. This becomes a problem as the current economic climate does not allow them to make huge margins in the business. This concern was shared by another interviewee subject C-2 I-3, and he mentioned that the reason he thinks that New Zealand is lagging in digital transformation is because the technology and its implementation are expensive. As he mentions below:

".... So we've decided to go with Oracle, NetSuite, which is a cloud-based system. It's very good. We found it, you know, but normally, an implementation like that takes 12 months plus, it cost around \$250,000 to just to install, and then the ongoing costs are about for us \$200,000 a year. So that's expensive. So that's, that's a big contributor to why there's a bit of a lag and New Zealand..."

Another subject C-1 I-2 discusses that big companies have money to “throw at” but also have resources for acquiring sophisticated systems, whereas in smaller businesses, these systems are not easily accessible, and therefore they want the implementation of less complex digital tools so that they do not have to educate, train by hiring someone. He also shares that the technology that they require is overseas and are expensive which restricts them and later upon looking at their current program, they decide that they would suffice and do not need further enhancement. Due to such cost prohibitions subject C-1 I-2 states that even though older machines have limitations, they use it for their business and replace it with newer machines only when necessary. This is noted by Masroor and Asim (2019) who state that giant multinational companies grab the share of the local market as they have better revenues and hence give a very tough competition to the SMEs.

Subject C-1 I-1, who is working under a supervisory capacity shares that if they could afford it, they would replace their existing machines with the latest technologies but it “does come down to money at the end of the day”.

Although cost is a factor in deciding whether there is a need to adopt new technology, subject C-4 I-8 does state that if the digital tool will make them faster, more efficient, and profitable, the organisation is keen on pouring resources to implement the digital tool.

4.3.1.2 Capital management and expensive manufacturing.

In any business, especially for SMEs, adequate capital funding is crucial as the purchase of sophisticated equipment, renting space for production, and hiring of labour is dependent on this factor (Darusman, 2023) however, the capital constraint is again one of the hurdles faced by these businesses. Subject C-2 I-5 shared that one of the drawbacks with SMEs is gaining funding for the purchase of technology. The subject mentioned that in order to make a product that is “compliant”, “quality assured”, and has gone through all the “testing standards” it is essential that the company is up to date with technology and the employees are upskilled. However, the subject feels that SMEs are getting punished due to a lack of capital.

Another element of capital management is hiring labour at a good wage, however, recently New Zealand has seen a rise in the cost of labour as they increased the minimum wage to \$22.70 an hour in April 2023. This decision was not welcomed by subject C-2 I-3, who states, “ that decision to put the minimum wage up again, it's going to be very hard for us, because we're competing with those other countries. We're not competing with local.”

4.3.1.3 Software implementation

Another hurdle in the process of digital transformation for SMEs is the acquiring of software that is not only economic but caters to the needs of businesses. As pointed out by subject C-1 I-2:

“we've been looking for two years now. And we've sort of waited a little bit to see if there's something more reliable in the market that will suit exactly what we need. We don't need the Rolls Royce; we need something that is actually can be made tailored for our business.”

The businesses that seek new software come with their own obstacles, for example, they are administered from overseas by an overseas staff, it is expensive, and they would prefer good software that are not only developed and implemented within New Zealand but also serviced locally. These business owners also require them to tailor the software to needs that are

specific to their business process. Subject C-1 I-2 states that, “that’s where it would be a real struggle to find someone in New Zealand, that will do that.”

Another point of challenge faced is pointed out by subject C- 3 I-7 who mentions that they lack a centralized software system. In her company, they use “multiple different forums, and software and streamlining processes” which removes the ease of use and creates complex workflows.

4.3.2 Human Factor

Zimmermann (2022) observes that during the digitalisation of company processes, businesses will need a workforce with various competencies due to human-machine collaboration and cross-company integration of processes. Hence, businesses will face human factor-related challenges that should be addressed and solved to achieve digital transformation.

4.3.2.1 Change resistant

According to Hyseni (2022), humans have the ability to adapt to changes, however, they crave stability and routine as it gives them a sense of comfort. Any changes happening causes them stress and makes people feel uncomfortable. Hence, businesses that go through digital transformation face a little pushback from their employees.

During the interview as well, one of the barriers that was mentioned during the interview was resistance to change. Since technology changes at a rapid pace, it has the potential to cause disruption in the organisation, however, these changes can be successfully implemented, if the transformation process succeeds in changing the mindset of the people in the organisation (Viki, 2018). Subject C-2 I-3 while talking about manufacturers in general stated that certain manufacturers in New Zealand have a certain mindset and are carrying out the same processes in their businesses which work for them and do not wish to change. Since their existing process has given them sufficient results, they do not feel the need to introduce anything new. This view was shared by subject C-2 I-4 who told that in one of the companies where he worked, a lot of people were “stuck in their ways”. As observed by Viki (2018), human life is an ongoing struggle between progress and inertia. Subject C-5 I-10 also explained that when introducing something new in the organisation, some employees do show some resistance; however, it depends upon the technology, or the software brought to the company.

One of the reasons for not changing or causing resistance was “age” as mentioned by subject C-5 I-9. She adds that when new software is developed for their business, she finds older employees struggling with the technology as compared to the younger ones. In terms of technology adoption and age, she finds the younger generation to be more adopted since they are born into it in contrast to the older generation. Subject C-2 I-6 had a similar opinion regarding age and said that the ease of adopting new technology is something that is seen with younger people, whereas it can be overwhelming for older people. The subject C-2 I-6 also adds, “but I'm not talking about, you know, 60-year-olds, I'm talking about people in the 40s”. This statement highlights the stagnation of middle-aged men in New Zealand.

Subject C-2 I-3 has also mentioned in his interview that in the event of bringing any automation to the company, middle-aged employees to older age employees are going to struggle with the changes. He states,

“Unfortunately, there is an aspect of our middle age to later that are really going to struggle with that. So, I think they are the ones that are really going to need a lot of help. Because we won't be able to get away from manual labour.”

4.3.2.2 Employment Apprehensions

The usual reason for resistance to change in most cases is fear in employees, as per Forbes magazine; and that is why it is crucial to understand the reason for the fear or apprehension and apply strategies that will help them and be open to change (Pryzstal, 2022). It was found that the employees had various apprehensions when it came to digital transformation. They were fear of redundancy, fear of technology, and fear that they will be humiliated if they did not have the necessary skill for using the technology. For instance, Subject C-2 I-3 stated that “in manufacturing, automation is seen as a bad thing”. It makes employees feel dispensable and fear for their jobs. Subject C-2 I-3 also states that “If you're on the factory floor, I think it just makes them fear for their jobs, creates panic, and it does”. He gave an example of this, where even moving a desk without consulting the employees created a widespread panic on the factory floor, as the employees were used to the old ways for ten to fifteen years.

Sharing more light on the fear of redundancy, subject C-2 I-5 also mentioned the fear of employment that his fellow factory workers had due to the organisation implementing a digital factory. He stated that his organisation will be introducing robots and cobots to their production line, hence, the employees in the factory fear that their jobs are about to be replaced. Subject C-2 I-4 also pointed out the same thing, “...there was some, some

reluctance amongst quite a few people to embrace it because they felt that that would replace them”. However, subject C-2 I-5 emphasizes that employees need to understand that “new technologies are there to aid the process and not to eliminate someone, but you have to upskill your labour”. He also stresses that the experience of the employees is far more valuable and indispensable. This point by subject C-2 I-5 aptly confirms the study conducted by Chao and Kozlowski (1986), where it is stated that the skilled employee will look at the new technology as an opportunity as opposed to a less skilled employee.

Subject C-4 I-8 pointed out that people are “scared of digital technology”. The reason behind this is that they are unable to use it easily and are embarrassed to share their shortcomings. He added, “...if someone around them can do it, and they can't, they instantly compare themselves to that person. And they don't want to be found out”. The people who struggle with technology often do not want that fact to be found out. This calls attention to the “shame” factor people suffer in the workplace. Employees who are unable to use technology adequately or face technical issues, feel they will be condemned by their coworkers (Hetler, 2023).

However, in company A, it was found out that the fear factor was not so much of a problem, since according to subject C-1 I-1, his superior treated the employees like family. He stated that his superior has kept a comfortable atmosphere where people look after each other. He also mentioned that in his capacity he tries to take the pressure off of his colleagues so that they do not have to worry about their jobs if they make a mistake.

4.3.2.3 Need for digital labour and upskilling

Contrary to the popular belief that digital transformation and automation of processes will lead to job redundancies, it was found that businesses do need labour to carry out operations in the business. This was maintained by subject C-1 I-2 who suggested that there is a need for people, especially the younger generation, to join the manufacturing industry to fill the labour gap. Subject C-2 I-3 also pointed out that there is “...shortage in New Zealand, especially in manufacturing” and indicated that “we won't be able to get away from manual labour”.

Nonetheless, it was indicated that the labour needed to be properly skilled or be willing to upskill. According to Cheatham (2022), upskilling refers to the process where the employees learn new skills or improve existing skills and it not only increases the morale of the employee and productivity but also ensures that business remains competitive. Subject C-2 I-5 said that if the employee is “not up to the date with the technology, and you're not up to the

scale with your skill set” then it will create problems in the processes as well as maintaining adequate standards of manufacturing. He also mentions that “...if they lose a role here and are made redundant, they can use that skill set for the next role”.

Subject C- 3 I-7 talks about the “appetite for continued learning” during the conversation of upskilling and the need for labour. She suggests that employees need to take the initiative and upskill themselves and bring those skills to the workplace. This not only applies to the factory level employees, but it is also crucial for upper management. Subject C-5 I-9 who is a creative designer in her company, shares that even though she has always been on the computer since childhood, she still invests time in upskilling and learning various “graphic programs and applications” rather than depending on the one she already knew.

4.4 Participants’ expectations from the government

Chen (2021) states that government plays an important role in promoting economic growth. By helping SMEs thrive and succeed the government is creating a situation that is mutually advantageous, because when SMEs prosper they contribute in the economy through taxes and employment creation (Milano, 2019). This section discusses the expectation of the interviewees towards the government to run their businesses smoothly and tackle the challenges they encounter.

4.4.1 Funding and Grants

The interviewees opine that certain support from the government will definitely help their business grow. One such assistance is funding and grants as cost is found to be the biggest barrier as per section 4.3.1. When businesses often struggle with cash flow, whether it is for new equipment or training of staff, grants can be a good source to secure funding (Thebenefits, 2019). It also helps businesses to gain access to new markets or develop various products and services (FasterCapital, 2023). Multiple interviewees shared similar viewpoints during the interview.

Subject C-4 I-8 stated, “They could definitely put up some funding, that businesses could be able to apply for and also get training, or whatever organization is willing to jump on.”

Subject C-2 I-3 also expressed how expensive it is to invest in equipment and also mentioned that the payback on such investment is relatively long and hence, in such situations, the grant from the government is beneficial. He also stated that “maybe we're lagging behind a little bit, because other countries are giving grants out and they are protecting their industries a little bit better.” Subject C-1 I-1 also shared that employees also want that their organisation

to gain some funding from the government and use it not only to buy equipment but also to train and learn new skills and apply them in their workplace.

Subject C-2 I-3 adds a crucial point to the topic of grants and states that even if grants are available, some businesses are not aware of it. He mentioned that “it's very difficult to know what's out there and available for grants”, hence, it is suggested that the government enhance transparency and accessibility of such grants.

4.4.2 Training and Incentives

Another aid required from the government is training and incentives. The interviewees recognise the importance of digitalisation and the skills needed to operate in the workplace, hence, they feel that digital training provided by the government would be beneficial. Subject C-4 I-8 shared that “they need to start funding digital training” and allocate resources to training individuals in the country. Subject C-1 I-1 suggested that they are keen on sending employees to such training sessions as it would be helpful to the companies. This feeling was also shared by C-5 I-9 who thinks that training is essential for upskilling and the incentives by the government would definitely motivate the businesses. She adds that the government should also provide tax deduction benefits as incentives to businesses that are investing in technology and training.

Subject C-2 I-5 does recognise the government initiative called “Callaghan Innovation” that provides various fundings and training, but states that there needs to be more agencies like this, but he also adds that “a group of companies that have already reached a certain sort of digital transformation, can set up the training program for other businesses.” This will not only reduce reliance on the government, but it will also help in addressing the company's specific needs and give practical insights and fasten the process of digital transformation across the country.

Subject C-5 I-10 suggests another way to tackle the hurdle of lack of adequate skills is to provide training to kids at the school level. He emphasises on skill development process given to kids in order to enable them to get into an industry matching their skills. He illustrates this point,

“So, we're just engaged in a nationwide retraining thing as early as trying to reach out to kids from school. So very early, we've got a nationwide program.... So, it looks for kids who've got an artistic angle at school, but no real idea where they're going. They just try and get them into our industry which is perfect for that.”

Subject C- 3 I-7 also agrees to the above-mentioned idea when asked about her expectations from the government and expresses that acquiring the right skills starts in school. However, she also believes that people as adults should be upskilling themselves rather than depending on the government or the company. She states, “But it's also up to them to upskill themselves and understand technology in the workplace in their own time and bring that into the workplace”.

4.4.3. Infrastructure and red tape

The need for better physical infrastructure was pointed out by subject C-5 I-10. He states that the government needs to provide better international and national infrastructure that is also efficient. New Zealand being a country of islands, needs to have better ports and airports for the movement of goods from one place to another. He adds that even within the country, the goods need to be moved from one location to the other and so the government needs to invest even on the roads within the country.

He also states that the government needs to “minimize red tape” in order to make it easier to run businesses. According to Bozeman (1993), red tape is bureaucratic rules and regulations that are in effect, however, they now pose as burdens and in fact, do not contribute to its original goal. In his statement, subject C-5 I-10 has pointed out that “a lot of small businesses are in fact trades” and cannot afford to have their own lawyers and accountants full-time. Hence, they want the bureaucratic process to be easier for the majority of their businesses.

4.4.4 Immigration

Businesses in New Zealand are in need of skilled labour, which can either be sourced locally or internationally. Some of the interviewees have pointed out that the New Zealand government needs to have a better immigration strategy to attract useful labour and fill in the market gap. subject C-5 I-10 states that they need more people coming into the country who have the skills to work efficiently. Subject C-2 I-5 also highlights the importance of opening up the country to skilled labour. Subject C-1 I-2 mentions that the younger population is now going towards other professions, away from manufacturing, hence, foreign workers are needed to address that void in the market.

4.5 Summary

This chapter has discussed the findings from the interviews carried out for this research. It began with a discussion of the factors that influence the digital transformation of SMEs. It later delves into the challenges faced by employers and employees in the process of adoption

of digital transformation and discusses the two factors: financial and human. It concludes with the discussion of the government's role and the expectations of the interviewees.

Chapter 5 - Discussions and contributions

5.1 Introduction

The purpose of conducting qualitative research was to allow for the underlying theory to emerge from the data. Thus, through thematic analysis, the researcher has identified the complex interplay of factors in this study that influence the digital transformation of SMEs and cause barriers to employers and employees during the transformation process. This chapter carries out the discussion of those factors and explains how it is related to the existing literature. It later discusses the theoretical contributions made by the researcher along with limitations and recommendations for future research. It later concludes with the practical and policy implications of this study.

5.2 Summary of the research findings

This study attempts to comprehend the process of digital transformation taking place in manufacturing SMEs in New Zealand. The findings of this study have emphasized that the digital transformation in a business is not just management fashion (Abrahamson, 1996), or IT-enabled change (Reis et al., 2018), but it is a process that necessitates an interaction of various factors for success. This study uncovered the financial, human, and government factors to expand the understanding of how digital transformation affects businesses and individuals. The current literature on this topic has emphasized how adopting digital transformation has positively influenced the firm performance (Guo et al., 2023; Nwankpa & Roumani, 2016; Teng et al., 2022; Zhai et al., 2022), however, it is also important to identify that such transformation is challenging and there are struggles in the process of adoption. This study has recognized those obstacles, that come in the form of cost and capital limitations, constrained accessibility of resources such as software or equipment, resistance to change due to various reasons, and the need for upskilling that can come at any age or phase of career.

The report by AlphaBeta (2021) has discussed how crucial digital transformation is for New Zealand and its potential to unlock billions for the economy, support higher incomes, increase automation, and help in gaining resilience. However, through the qualitative analysis conducted in this study, the underlying struggles of the participants have come to light. It has been found that cases have struggled with the cost of implementation as well as the cost of labour. The cases have struggled to find capital for transformation and indicated that the rising cost of labour only adds to their problem. Hence, the findings of this study have

addressed the barriers at the foundational level. The researcher believes that in order to reach the potential it is imperative to address such fundamental issues.

The findings of this study have also shown that the participants are keen on investing and adopting new technology for the purpose of efficiency, surviving market competition, and changing the operations of the company. Nonetheless, is not carried out randomly or erratically, but is a systematic process that takes into consideration the strengths and the weaknesses of the firm. For instance, during the adoption of new technology, efforts are made by the business to ensure that employees are aware of the upcoming change to ensure that their mindset is receptive to the situation. Purposeful conversations take place during that process to ensure that the employees are less resistant to change in the company. Such strategy implementation shows commitment toward digital transformation and aligns with the concept of “digital maturity”. It confirms the statement by Kane et al. (2017) that a systematic way of transforming an organisation digitally is described as digital maturity., where the organisation sets realistic priorities and is committed to them to ensure success.

Furthermore, it was observed that even though participants were keen on new technologies, some were faced with the obstacles of being unknown about various technological opportunities that exist in the manufacturing industry and only some were able to combine their transformative vision with investments. For instance, when some participants were unhappy with their traditional ERP technology in the workplace and wanted to better systems in place, they were either unaware of better software that could act as a replacement for the existing one or unable to access it due to financial or geographical constraints, exhibiting their maturity level to digital beginners (Westerman et al., 2012).

Previously in the literature, scholars have focused on digital leadership (Araujo et al., 2021; Klein, 2020; Zhu et al., 2022). They have discussed the need for digital leadership in the technological environment, along with the possession of high-tech skills and team management. They have also discussed the leaders’ vision in the process of digitalization. However, few include the role of employees in their papers. Research conducted by Zhu et al. (2022) not only focuses on digital leadership but also on employee creativity and employee job crafting. The results obtained from this thesis extend the research by Zhu et al. (2022) and has provided a direct point of view from the employees who have discussed how digital transformation is affecting their current skills and how support from their managers and supervisors has made it easier to navigate their struggles.

In a study by Schwertner (2017), it has been mentioned that human factors such as employees' resistance to change and lack of knowledge acts as a barrier to transformation, however, it does not shed light on why and how of this problem. In this study, the researcher has delved deeper into the reasoning for such behaviour. The findings have shed light on how many people are unwilling to change and adopt something new just because their existing process works fine, it has also found that age acts as a barrier to change and older people find it harder to change compared to the younger generation. This also contributes to their panic regarding job retention and workplace interaction.

5.3 Theoretical contributions

The process of digital transformation in organisations has been researched in various countries, however, very few have been conducted in the context of New Zealand. This study intends to bridge this gap, by analysing the SME cases in New Zealand. Through this examination, this study enriches our understanding of factors that necessitate the adoption of digital tools and also draws attention to their challenges. It has provided an insight into the practices conducted by these organisations which enhances our knowledge of the strategies employed for a smoother transformation process. It has also highlighted the knowledge of employers and employees regarding digital transformation and digitalization. The findings indicate that the businesses interviewed for this study have adopted digitalization or undergone the process of transformation mainly for competition survival and efficiency of production. This indicates that there is still insufficient knowledge about the need and long-term effects of adopting digitalization. The findings also illuminate the reasons behind resisting change by the employees.

It has also been identified in the literature that it is important to study the perspectives of employees during the process of digital transformation as it is a less investigated topic (Cioppi et al., 2023). Hence, this study has endeavored to fill that gap by interviewing the employees of the SMEs and understanding their points of view in this process of transformation. While there have been studies digital literacy of the employees (Cetindamar Kozanoglu & Abedin, 2021) and digital leadership in order to lead employees, this study has highlighted the challenges from the viewpoint of employees along with the perspectives of the leader. It also addresses the personal barriers faced by the employees in the workplace. The researcher finds it important to address this point since digital transformation not only involves the acquisition of various digital tools and equipment but it also involves the

workforce (Cetindamar Kozaoglu & Abedin, 2021). This study has made a novel contribution by studying the barriers of digital transformation from employees' point of view.

Furthermore, studies have been conducted on digital transformation in New Zealand, for instance, the Ministry of Business, Innovation, and Employment has conducted surveys to measure the digital capabilities of businesses (Betterforbusiness, 2021), providing perspectives of businesses in relation to their adoption of digitalization; and AlphaBeta has studied the economic implications of adopting digital transformation in New Zealand (AlphaBeta, 2021), however, these reports are quantitative in nature and do not focus on the experiences on the individuals. Hence, this study has provided a unique perspective by offering detailed insights into the participants' circumstances and decision-making.

5.4 Practical implications

This study has identified the factors that barriers that are faced by the employees in the organisation during digital transformation. This identification is useful for organisations that are trying to understand the reason for resistance by employees and their apprehensions. It will enable them to devise strategies to smoothly navigate these barriers. For instance, in this study one of the strategies employed by the superior was to treat the subordinates like family and help each other when faced with challenges in the workplace, fostering a sense of unity amongst the employees. Also, when the change is about to happen, employees are involved in the decision-making process. Such approaches enhance problem-solving abilities and make the transition smoother.

Another type of strategy that can be adopted is empowering employees with continuous training. The participants interviewed were willing to continuously and consistently upskill and confront changes. Hence, companies should make comprehensive training programs a part of their workplace and should be maintained as a priority. This would not only tackle employees' apprehension about technology but also instil a sense of confidence in them.

5.5 Policy implications

This study has also identified ways that the government can provide assistance to these cases. The participants have provided insights and recommendations that would enable them to run their business efficiently. For instance, funding, grants, and incentives have been the most common suggestions by the participants. It has drawn attention to the eagerness of these

businesses to grow despite the current challenges. Responses from the participants serve as practical knowledge and would enable the government to frame policies for aiding SMEs.

In this study the factors that influence the digital transformation of business have been recognized and indicate that there is a need to spread awareness regarding the various digital tools available in the market, their accessibility, and long-term benefits. Hence, this knowledge can help the government set up various programs to assist these businesses and empower them with multiple options.

The government can also frame policies that make it obligatory for schools to incorporate digital training in their curriculum to enhance digital literacy. It will help the students to build relevant skills at an early age and prepare for their careers.

5.6 Limitations

This study has certain limitations that need to be considered. The researcher used a case study method using multiple cases set in a specific context; hence it is not generalizable to a larger population. Case studies are context-specific (Greene & David, 1984) and involve the behaviour and opinion of specific individuals in a particular context, hence they have little basis for the general population (Crowe et al., 2011; Simon & Goes, 2013). They cannot be replicated like experiments or conducted sufficient times to satisfy sampling theory requirements (Greene & David, 1984). Hence, the cases do not represent the views of all manufacturing SMEs in New Zealand.

Since this study was using multiple cases as opposed to single case study method, the researcher was not able to explore each case in depth, and it limited the level of detail that would have been possible with a single case study. However, using multiple case study methods provided a broader understanding of patterns which contributed to the rich findings. During the process of literature review, it was found that there is a limited amount of literature available on digital transformation in New Zealand. This acted as a catalyst for the decision to go forward with this study.

Another limitation was a limited participant pool. Many businesses were approached through various sources as mentioned in chapter three. However, only a few businesses responded positively, which reduced the scope of diversity. Nonetheless, the findings of this study do offer valuable insights regarding the experiences of the participants.

5.7 Recommendations for future research

In this section, the researcher has presented recommendations for future research as it is important to advance our understanding of this topic. This study can be replicated in different contexts, and with a larger sample size to attain generalization with the wider population. This can also be achieved by doing some quantitative research work through which a big sample size can be achieved.

As discussed in the literature review, there is a need for research on digital transformation that is employee-centric. Hence, future work can also focus only on a single organisation and capture an extensive point of view of people with different levels of employment. There is also the scope of conducting a longitudinal study exploring how digital transformation has affected SMEs. At last, the research on digital transformation can be conducted in the context of sustainability and explore how digital transformation is helping organisations achieve sustainability.

5.7 Conclusion

The discussion in this chapter has answered the two research questions the researcher set to explore, i.e., what factors influence the digital transformation of SMEs in New Zealand? And what are the challenges faced by the stakeholders during the transformation? The researcher has also discussed the findings in the context of literature. The theoretical contributions along with the limitations have also been highlighted and recommendations for future work have been made. This chapter concludes with practical and policy implications.

Chapter – 6 Conclusion

This thesis has attempted to explore and understand the digital transformation taking place in manufacturing SMEs in New Zealand through qualitative methods using a multiple case study approach. The researcher interviewed ten participants through semi-structured interviewees in order to capture their perspective on digital transformation in their workplace. The primary objective of this study was to address the research questions: What factors influence the digital transformation of SMEs in New Zealand? What are the challenges faced by the SMEs during the transformation? And has specifically attempted to capture the perspectives of employees in an organisation as it has gained limited attention in previous studies and the researcher intended to bridge this gap.

This study has uncovered three factors, where the first factor has discussed the motivation to adopt digital tools and technology and the other two factors have discussed the challenges in the adoption. It has also uncovered the expectations that the participants have from the government so that their journey of digital transformation can get smoother. It has been identified that competition, efficiency, desire to have a less paper-based system and desire for real-time processing scenarios for both company and customers are the reasons that SMEs would like to have digital transformation. It has also been observed that although there is enthusiasm for adopting new technology, various reasons like high cost of equipment, cost of implementation, unavailability of the right software for the business, resistance from employees, cost of labour along, and availability of skilled labour, have made the organisations sceptical in adopting new technology.

Furthermore, through this study, the researcher has been able to understand the standpoint of the employees in SMEs. It has addressed their apprehensions of digital transformation i.e., fear of technology, humiliation, and redundancy, unveiling their emotional and psychological concerns. It has also highlighted the significance of digital literacy and constant upskilling to stay relevant in the workforce. The findings later concluded with the expectations of the participants from the government in order to run their business smoothly and adopt the latest technology.

In a broader context, this research holds theoretical and practical, and policy-based significance. By exploring the varied perspectives, this study contributes not only to the theoretical understanding of digital transformation but also offers practical insights and policy implications. The researcher has also made recommendations based on the research

and analysis of the data from interviews. This study was carried out to understand the reason behind the scepticism of SMEs in New Zealand in adopting technology in their businesses, some of which are now addressed through the findings. The researcher hopes that this study and its findings contribute to the enabling of a smoother process of digital transformation in small and medium-sized enterprise which can in turn reduces the cynicism surrounding digital transformation.

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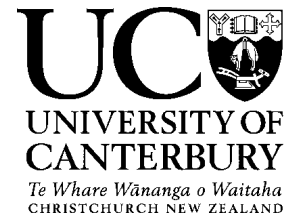
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Appendices

Appendix A: Consent Form



University of Canterbury, Business School
 Phone: +6433694781
 Email: vda12@uclive.ac.nz
 17th October 2022
 HREC Ref: 2022/85/LR

Understanding Digital transformation of SMEs in New Zealand: Case Study **Consent Form for Participants**

- I have been given a full explanation of this project and have had the opportunity to ask questions.
- I understand what is required of me if I agree to take part in the research.
- I understand that participation is voluntary, and I may withdraw at any time without consequences. Withdrawal of participation will also include the withdrawal of any information I have provided should this remain possible.
- I understand that any information or opinions I provide will be kept confidential to the researcher and her supervisors. I understand that any published or reported results will not identify me.
- I understand that all data collected for the study will be kept in locked and secure facilities and/or in password protected electronic form. I understand the data will be destroyed after five years.
- I understand the risks associated with taking part and how they will be managed.
- I agree to be audio recorded. I understand how this recording will be stored and used.
- I understand that I can contact the researcher Vidhi Dawda at 0225100235 or supervisor Dr. Christian Walsh at +6433694781 for further information. If I have any complaints, I can contact the Chair of the University of Canterbury Human Research Ethics Committee, Private Bag 4800, Christchurch, (email: human-ethics@canterbury.ac.nz).
- I would like a summary of the results of the project.
- By signing below, I agree to participate in this research project.

Name: Signed: Date: _

Email address: _

Please return the consent form to Vidhi Dawda via email or at the interview.

Appendix B: Information Sheet



University of Canterbury, Business School

Phone: +6433694781

Email: vda12@uclive.ac.nz

17th October 2022

HREC Ref:

Understanding Digital transformation of SMEs in New Zealand: Case Study

Information Sheet for participants

Kia Ora,

My name is Vidhi Dawda, and I am a student (Postgraduate) at the University of Canterbury I Te Whare Wānanga o Waitaha (UC). You are invited to participate in a research study on **Understanding Digital transformation of SMEs in New Zealand: Case Study**. Other research team members include Dr Christian Walsh and Dr Claire Bi. The study is being carried out as a requirement for the Degree of Master of Commerce in Management.

What is the purpose of this research?

This research aims to analyse how digital transformation is taking place in SMEs in New Zealand and identify the challenges faced by the stakeholders involved. I am interested in finding out about the reasons behind the hurdles in the adoption of digitalisation. The information from this study will help to understand why SMEs in New Zealand are slow or lagging in adopting digital technologies.

Why have you received this invitation?

You are invited to participate in this research because you have responded to a request for participants in this study.

Your participation is voluntary (your choice). If you decide not to participate, there are no consequences. Your decision will not affect your relationship with me, the University of Canterbury, or any member of the research team.

What is involved in participating?

If you choose to take part in this research, you will participate in an interview. This interview will take place face to face or via zoom. I will contact you to arrange a suitable time and location. The interview will involve me introducing myself, answering any questions you have, and confirming your consent to participate. Then, I will begin the interview and will ask you questions about digital transformation in your enterprise and challenges faced by you as a stakeholder. I estimate the interview will take around 45 minutes.

Will the interview be recorded?

With your permission, the interview will be audio-recorded using a portable device (digital voice recorder). The recording will be used to create a written transcript of the interview, which I will analyse as part of the research. The transcript will be created using otter.ai by me and will be edited by listening to the audio. If you choose to review a copy of the interview transcript, I will provide this to you within a week of the interview. I will ask you to provide any amendments or additions via email within seven days.

Are there any benefits from taking part in this research?

We do not expect any direct benefits to you personally from participating in this interview. However, the information gathered will potentially provide a deeper understanding of the digital transformation taking place in New Zealand and about the digital maturity. Also, studying the challenges faced by the stakeholders during the process of transformation, will help in policy making, research and practice which will ease the obstacles of business that occur during the process of adoption of various technologies.

Are there any risks involved in this research?

We are not aware of any risks to participants in the research.

What if you change your mind during or after the study?

You are free to withdraw at any time. To do this, please let me know either during the interview or after the interview has finished. I will remove any information you have provided up to that point from the data set if it is still possible. Once data analysis has commenced, removal of your data may not be possible.

What will happen to the information you provide?

I will transfer the audio recording to a password-protected file on the University of Canterbury computer network and then delete this from the recording device as soon as practical. All data will be confidential. To ensure your identity is not known to anyone outside the research team, we will keep your signed consent form in a file separate from your interview transcript. If you choose not to be identified/to keep your identity confidential, your name will be changed to a pseudonym (a fake name) whenever it appears in the transcript and anywhere else. We will store the file that links your real name and your pseudonym individually on a password-protected, secure device.

All study data will be stored in password-protected files on the University of Canterbury's computer network or stored in lockable cabinets in lockable offices.

All data will be destroyed five years after completion of the study. I will be responsible for making sure that only members of the research team use your data for the purposes mentioned in this information sheet.

Will the results of the study be published?

The results of this research will be published in a master's thesis. This thesis will be available to the general public through the University of Canterbury library. There is a possibility that the research will be published in an academic or professional journal. A summary of results will be sent to all participants who request a copy.

Who can you contact if you have any questions or concerns?