DIGITAL TANIWHA

Growing Māori participation in the IT industry

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Warren Williams

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Abstract

This study explores the influencing factors on the participation levels of Māori (indigenous people of New Zealand) in the national IT industry. It particularly focusses on Māori IT professionals and why their participation in IT sector events and activities are not as visible as non-Māori. The researcher, who is also a Māori IT professional, has engaged with Māori in IT during his career, and forms the initial question of "where are they?". The researcher proposes that more IT entrants and current IT professionals, who hold a Māori worldview grounded in cultural values that promote innovation and creativity, would benefit not only Māori but the IT industry and the nation.

This thesis employs qualitative aligned research approaches - Kaupapa Māori and Wayfinding, to enable culturally appropriate methods during the data collection and analysis stages. It uses these approaches to support the inclusion of key cultural tenets such as Te Reo Māori (Māori language) and Māori values and practice. This research introduces the term "digital kaitiaki" to appropriately refer to Māori IT professionals. It collects data using appreciative inquiry and action research approaches and specific methods from semi-structured interviews held with digital kaitiaki; through focus groups with over 70 people; and records from action committees and working groups; to field observations of over 30 people.

It examines the fieldwork data using thematic analysis and cross checks the themes against influencing factors from the participant's (including his own) personal and professional careers. The analysis identifies the following key themes: Māori identity and culture, feelings of personal and cultural responsibility, motivational forces, and role models. To respond to these, the study proposes a "Waka Kaitiaki Matihiko" model that connects with widely known Māori metaphors and symbols. It deploys these to inform and capture existing and potential future processes involving digital kaitiaki and to suggest how a culturally supported vehicle for Māori worldview engagement could encourage more Māori to enter IT and lend support for leadership roles for existing Māori IT workers.

To realise that potential, the study looks at leadership styles of the past to recognise what leadership is needed to increase contemporary Māori participation in the IT sector. It compares and contrasts leadership styles over time and constructs a new "digital taniwha" leadership style as fit for purpose for the challenge of growing Māori participation and for steering more Māori into leadership roles. Finally, by building on categories in the Blue Ocean Leadership grid and interweaving them with elements from existing Māori leadership literature, metaphors and symbols, and the findings from participants, it recommends a series of action-oriented interventions. These are designed to address the challenges identified in the key themes and feature governance and leadership programmes, as well as talent and career pathways, Te Reo Māori digital projects, tuakana/teina support and mentoring models, research into diversity representation (e.g., women and youth), and models designed to provide space to support the interventions proposed.

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Glossary

Aroha	to have empathy for, love
Digital Taniwha	a Māori IT professional – created from this thesis (NB a declaration of interest, I also run a company called Digital Taniwha)
Hapū	Sub-tribe
Hoamahi	Work colleague, fellow workmate
Hoe	Oars, paddles
Hui	a meeting or gathering
Kaimahi	Worker, employee
Kaitiaki	A guardian, wooden statue of a guardian at front of a waka
Kaitiakitanga	guardianship, trusteeship, stewardship of resources
Kaumātua	an elderly person, an elderly man
Kaupapa	subject or topic to be discussed/attended to
Kaupapa Māori	a Māori approach, Māori principles, Māori customary practice
Kōrero	to speak, to talk
Kōrero Ōpaki	informal discussion/conversation
Koroheke	elderly man
Kōtahitanga	unity, collective action fostering unity
Kuia	elderly woman
Mahi	work
Manaaki	respect, to care for
Manaakitanga	the caring for others, demonstrates hospitality
Marae	traditional Māori building or gathering place with buildings
Mātauranga	understanding and seeking knowledge, education
Mōhiotanga	understanding, a person's knowledge
Moutere	An island
Ngā Rōpū Matihiko	groups of digital/technology expert people
Pākehā	person of European/Anglo descent
Pepeha	a traditional introduction reciting birth places of significance
Rangatahi	youth or a young person

Rangatiratanga	chieftainship, sense of autonomy, leadership of a group
Rōpū	Group of people
Rūruhi	an elderly woman or women
Te Pae Tawhiti	A desired future, vision
Te Reo Māori	the Māori language
Tika	what is correct or proper behaviour
Tikanga	correct procedures, customary system of values and practices
Tuakana/teina	older / younger relationship
Waka	a canoe, boat or ship.
Wānanga	a place of learning or knowledge, a type of tertiary institute in New Zealand
Whakapapa	genealogy, tribal connections through lineage interconnected view of all creation
Whakapono	belief, trust, faith, being true
Whānau	family
Whānau Whānui	extended/wider family
Whanaungatanga	relationships and connection, kinship, sense of family connection

CHAPTER ONE: INTRODUCTION

Wāhanga Tuatahi: Kupu Whakataki

Statement of the research and background

This study set out to increase knowledge and understanding on the neglected research area of Māori [indigenous people of New Zealand] and the information technology (IT) industry. As a piece of action research by a Māori IT practitioner as well as a doctoral candidate, it seeks to achieve real world change and help Māori by finding ways to increase the numbers of Māori, and the numbers of Māori leaders within that industry. In addition, during the process, there will be a measure of reflective practice in showing the origins, and the initial perspectives I held as a beginner researcher. This will also involve unpacking changes in my reading, writing and thinking as these impacted on my analysis, conclusions and recommended interventions for the future.

In opening up these self-reflections, my hope is that, in the academy, this journey will be of value in encouraging other researchers into this area and emboldening budding and existing Māori researchers. It initiates discussions, and personal reflections, with the aim of assisting other Māori in embarking on, and sustaining, similar research projects designed to help their people. From my standpoint, research that involves Māori should have the potential to improve, enhance or at the very least provoke thinking about the historical and present-day contexts that impact Māori. Research (Penetito, 2010; Ratima, Brown, Garrett, & Wikaire, 2007) and personal experiences, support my view that Māori have to work very hard in New Zealand to operate in a predominantly Eurocentric world. Accordingly, in some cases, this research concludes with recommendations for relative independence from some current environments. In others, the research recommendation acknowledge that many Māori want to inhabit but to live in these environments, albeit with greater acknowledgement, autonomy, and representation.

So, what does this thesis seek to contribute to research? It aspires to add original findings to the growing body of research on Māori in general, and to the relatively neglected area of IT industry-related research (including aspects of leadership,

management and communication) in particular. There is limited literature about Māori in IT and most literature about indigenous peoples in IT has emerged from such other countries as Africa, Australia, Canada and India. Even in these parts of the world, there is a small body of work by a small number of researchers (Dyson & Robertson, 2006; Kamira, 2003; Parker, 2003). Most of the research relating to IT and indigenous people can typically be found in industry and government reports or is otherwise focussed on technical reports about a technological device or application.

This gap in such an important knowledge arena opens opportunities for committed Māori researchers to intervene in a history where Māori have often had to make their own opportunities out of enormous countercultural societal pressures (e.g., colonisation, assimilation and oppression). As research in other fields (Durie, 2001 in health; Maxwell, Ratana, Davies, Taiapa, & Awatere, 2019 in marine management; G Smith, 1997 in education) has shown, innovative thinking is possible through adopting a Māori worldview lens. That lens can also be applied to non-Māori environments and can produce holistic solutions that help the whole of society. It should also generate ideas and interventions that can be productively applied to other indigenous groups, and first nations, in other parts of the world (e.g., Australia, Canada, the USA).

Origins: The researcher story

My inspiration for beginning this research came out of a series of experiences stretched over many years. However, the very first "spark" would have been from my whānau and especially my mother, who was adamant that education was the way to ensure her children were successful in life. It was drummed into all our whānau, including me, that we were all going to university to "get educated" and that Māori had, like other ethnic groups, every right to be at university. My mother prided herself as someone who would have done well at higher education. She would share stories of how she enjoyed learning, but since she was the oldest of seven siblings, her responsibility to help raise the whānau meant she couldn't continue her education into higher levels.

I think it's fair to say that parents want their children to be successful in life, and my mother knew that since she wasn't able to excel in education as she would have liked, she would pass those aspirations on to her children. I was raised in a time (1970s)

and place (Gisborne-East Coast New Zealand) where family income was low and unemployment was high, and the jobs that did exist were typically manual with poor wage rates. My family and I understood that working hard and doing well in education was our best chances to becoming successful. Education and employment were major challenges for Māori in those times (and unfortunately the negative statistics are still prevalent to this day). This was my first experience that the world would not only be hard, but somewhat harder for Māori.

The next influencing factor in my life was noticing that Māori culture was not the norm and did not fit within sectors that affected our everyday lives. In the 1970s and 1980s after a long decline, the Māori language was undergoing a renaissance and kapahaka (Māori culture) clubs at schools were beginning to grow. It was as if they were a separate part of society that only Māori knew and cared about. As the years passed, I saw how Māori language and culture started becoming more visible throughout New Zealand culture, notably in areas such as sports, television and film, entertainment, and music. However, when it came to industry sectors like information technology (IT), the work culture would adopt Māori proverbs as motivational statements (e.g. in strategic plans, mission and vision statements), but don't really adopt the Māori worldview in their practices (Spiller, Barclay-Kerr, & Panoho, 2015, p. 57), which I believe discouraged Māori to enter IT as a career, and even worse, encourage Māori already in the industry to put their culture on hold in favour of the current mainstream culture already established. Actually, I may not have started this research journey if I had not seen the inequality of representation in the IT industry first-hand.

In 1991, I had enrolled in a four-year computer science degree at the University of Waikato, and it was here that I became interested in Māori participation in the IT industry. As a first-year student new to the university landscape, I naturally gravitated to other Māori in my classes to build those initial connections and networks with people who have similar experiences to me, or maybe from my hometown. During my first year of classes, I saw approximately 20 to 30 Māori students in the lecture room. These classes consisted of between 150 to 200 students and it was surprising to me that there were so little Māori attending. Being brought up in a town where Māori made up a significant number of the population, and heard that Waikato University was one of the main universities that Māori attended, my expectations were that there would

be more Māori in this degree, and that surely there had to be more Māori interested in IT than just over 20 students.

My expectations of greater Māori numbers were supported by the fact that Hamilton (where my university is located) is one of the major cities in New Zealand with a strong Māori population. So, I saw no reason why a proportional number of Māori would not be represented in this degree. Admittedly, as a first-year undergraduate and embarking on a life-long experience, my naivety may have influenced my expectations, however, I believe it was these observations that fuelled the "spark"' to the beginning of my research inquiry, and led, over time, to this journey into PhD study. Over the next four years the number of Māori attending class gradually declined and in my final year, only one other Māori student remained. I was the only Māori to graduate within the standard four-year timeframe for my particular degree. On top of my puzzlement about why so few Māori were enrolling in IT programmes at university, a second key observation I made was, why were so many of my Māori peers leaving this field of study? The declining numbers indicated either something was not working in the programme for Māori, or that external influences were causing Māori to withdrawal from this area of study.

It was during these years that the genesis of ideas of social inequality began within me. This inequality was through an initial observation of the small number of Māori attending a computer science lecture at my university. This observation would be the second "spark" that draws my attention to the environment I'm in, the career I had chosen, and the various type of people in my chosen career pathway. I initially thought that maybe I hadn't experienced enough of the world to make such an assumption and so this spark remained dormant until the next life experience would cause it to grow.

In the years following university graduation, my career experiences confirmed my early awareness that Māori participation in the IT industry was minimal. By 2018, I had worked in the New Zealand IT industry for twenty-two years and, throughout that time, had come across very few other Māori. As my progression up the IT career ladder continued, from entry to advanced levels, the number of Māori I encountered declined further. This was even the case when I worked for a large Māori organisation that had

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a high proportion of Māori employees. Of the 1200 employees, only 2.1% were Māori and holding IT-related roles.

While attending industry conferences, formal and informal gatherings, it became apparent that only a handful of Māori were attending these meetings and the lack of visible Māori attending strategic and executive level forums was astounding (e.g., less than 10 out of 700 people at times). With the few and regular Māori at these events, we got to know each other very well. While it was heartening seeing familiar faces at these gatherings, I was concerned, and this raised some questions for me: why was there no increase in the numbers of Māori in the IT field? Or, were there many more who were just not attending these events? That raised further questions: if there were other Māori IT professionals: why weren't they attending these events and were they going somewhere else? I felt a need to bring about awareness of the participation rates of Māori in the IT industry because I had seen such a lack of Māori during my career.

The last "spark" of inspiration would be the area of technology itself. I recognised early in my high school years that technology was going to change the world, for Māori especially, and that it was essential that Māori be the best they can be in this area. I wanted Māori to be both benefactors and leaders of this industry. To me, the rapid change of technology became both a challenge and an opportunity for Māori to advance themselves into positions of success. The challenges related to barriers to entry into IT, for example cost and access to IT, while the opportunities related to applying technology to non-typical environments, for example the natural world environment, and cultural revitalisation.

I would call all of these influencing factors the start of a "fire within me", that began as embers but grew over time as I matured and gained access to wider forums through my fortunate career pathway in the IT industry. As I complemented my industry experience with an academic portfolio from undergraduate degree to post-graduate diploma and masters qualifications, I realised that undertaking doctoral research studies would help me explore my internally motivated questions to produce a piece of work that could be a positive contribution to the research arena.

The New Zealand Technology industry

Information and Communications Technology (ICT) is a fundamental part of the everyday lives of people in New Zealand and the world. Even before Covid-19, which has accelerated the scale, speed and need for ICT, it was established as a necessary component in terms of how businesses engage, evolve and remain competitive in an ever-changing economy. The Organization for Economic Cooperation and Development (OECD) maintains that ICT consists of three main activities; ICT manufacturing, telecommunications and information technology (IT) services (Statistics New Zealand, 2009). In the context of this research, this study will adapt the OECD definition of ICT but will use the more current abbreviated term of IT (instead of ICT).

In New Zealand, the government has for years recognised the importance of IT to the economy, in particular. A 2015 report by the Ministry of Business Innovation & Employment (2015) calculated that the IT sector contributed over $1.2 billion to the New Zealand Gross Domestic Profit (GDP) from 2008 to 2013. The Ministry further noted that the "IT sector is growing fast" (Ministry of Business Innovation & Employment, 2015a) and so actively promoted growth in this sector to secure a better economic future for New Zealand. Statistics New Zealand (2014) estimated that there were 5,046 businesses classified as solely in the IT industry, and employment figures demonstrate that there were 74,900 IT occupations in all New Zealand sectors in 2014 (an increase of 18,000 jobs in the 10 years to 2014). While there is limited information about Māori IT businesses, these numbers continue to increase and recently the Māori economy is set to be a significant contribution to New Zealand's economy (J. Mika, 2019).

Alongside this growth, the Ministry of Business Innovation & Employment (2015) identified a national shortage of highly skilled IT professionals(Ministry of Business Innovation & Employment, 2015a, p. 1). This IT skills shortage is not particular to the New Zealand context only, but can be seen as part of a global phenomenon, with a number of other countries looking to address this very same issue (Schneiderman, 2014; The Labour Party - UK, 2013). The New Zealand government has identified a number of IT skill-sets that are lacking in the New Zealand workforce and in an attempt to attract more worker to the industry, they have made this information available to

immigrants wanting to work in New Zealand (Immigration New Zealand, 2015). The skillsets identified for immediate or urgent filling are across various industry sectors such as agriculture, construction, engineering, health and IT. The IT occupations that appear on the skills-shortage list include project managers, business analysts, software engineers, security specialists, system administrators and support officers (New Zealand Government, 2018). The New Zealand government provides opportunities for immigrants who hold qualifications relevant to these occupations to apply for a temporary work visa.

The New Zealand government's acknowledgement of the IT sector, and its positive contribution to the New Zealand economy is further illustrated by supportive initiatives that address the challenges facing the sector. The government has proposed and undertaken projects that aim to grow businesses, strengthening educational pathways into the IT industry, and encourage the expansion of IT infrastructure across New Zealand (Ministry of Business Innovation & Employment, 2014, 2015a). These initiatives help highlight the active role that government has taken and continues to take. My research seeks to support these initiatives by identifying informed interventions that will not only address the dearth of literature in the academic side of this specific field but will also recommend ways for Māori to participate in, and lead in this vital sector of the New Zealand economy. This research will outline approaches, themes and interventions that improve Māori participation rates in the IT industry. The next section expands upon the importance of Māori participating in the technology industry.

Starting with ourselves: Māori making the change

Government and industry publications identify Māori as already working in the New Zealand IT sector and that same literature provides rich information to share about the drivers that influence Maori participation in IT (Ganesh Nana, Masrur Khan, & Schulze, 2015; Te Puni Kokiri, 2015). Similar research into other indigenous communities shows that for indigenous people to be successful in the IT sector, requires participation of those people in that actual industry. Robertson, Dyson, Norman and Buckley's (2002) finding that "successful initiatives to improve the lives of Indigenous Australians depend on the active participation of Indigenous people" (p. 288). Although the statement is set in the context of increasing the participation of Indigenous

Australians in Information Technology Industries, it is at least equally appropriate when applied to the New Zealand context and the issue of Māori participation in IT. Simply put, in order to find out how to increase Māori participation in IT, a good place to start is to talk to Māori IT professionals already actively engaged in the sector.

Following my experiences in the industry to date, I began to question the impact on Māori in IT, and indirectly, on myself. Questions were starting to form in my mind that I now look back upon, as a growing "internal voice" concerned about what was happening to Māori in my industry. That is, in the world in which I had formally trained and in which I was personally involved. Not only was I concerned about the low numbers of Māori entering the IT industry, I was thinking about positive actions I could take to increase these numbers. Thinking about what drove me to enter the IT profession, I reflected on barriers I encountered and how I overcame them. I also looked at how I could learn from what has worked well so far, and what could address barriers to entry for Māori into IT. I began to form the following two questions: could I research key drivers and barriers that influence Māori participation in the IT industry? And could I develop, and, if possible, implement interventions to help increase Māori participation in the IT industry? I sought to design interventions to work on encouraging the positives and focus on what works well, and what could be done better to assist Māori entering the IT profession. This became my awakening to a (PhD) research journey that I never thought I would do.

As a Māori involved in action research, it was important that I understood my own identity and culture as I would not just be a researcher but be an active participant too. This would challenge my current understanding and encourage me to upgrade my Māori cultural knowledge and practice. In addition, I reflected on the potential participants I would engage with, most likely all Māori, and so committed myself to a culturally appropriate approach. The one that best fitted what I wanted to do was a Kaupapa Māori approach (described more in later chapters) because it espoused culturally appropriate protocols and language for this journey. Shifting from my own perspective I began to think about the perspectives of other Māori in IT. The next section elaborates on these various perspectives.

Responsibility to influence change

Over time, my interest grew towards the role of IT leaders in increasing Māori participation in the industry. This included my own role as a Māori and an IT leader. As a Māori IT professional, I formed the belief that all Māori IT professionals had a responsibility to encourage other Māori into our profession. Many other professions such as management, law, and accounting were seeing a surge of promotional initiatives to increase their Māori students, and so in 2008, I supported the hosting a meeting of Māori IT professionals, businesspeople, and government representatives from the IT and telecommunications sector. This meeting was held at my then employers' (a Māori-centric organisation) premises as they also saw a responsibility to support such a meeting because of the potential to positively impact Māori and the IT profession. Looking back now from a researcher's perspective, I would say this was my very first formal intervention into supporting more Māori participation into the industry. I didn't realise that this intervention would be part of a suite of interventions, and more consciously planned interventions until much later.

The purpose of the meeting was to discuss ways for Māori to have greater input into government IT initiatives. This meeting was significant for me because it was my first introduction to a broad group of like-minded Māori IT professionals who were passionate about Māori participation in IT. Following on from this, I joined two Māori-centric IT industry fora that were striving to increase Māori participation and to promote change by lobbying the government and key businesses within the IT industry. One of these fora contained Māori IT professionals from around New Zealand; the other forum had Māori IT professionals from the Auckland region. Both groups undertook a number of initiatives aimed at helping individual Māori, Māori businesses and Māori in their communities. Initiatives ranged from representing Māori at numerous IT events through applying for IT funding, to delivering projects that helped increase Māori involvement in IT.

These groups continue to work at creating change for Māori in the IT sector. It was at this point I realised that I needed not just to look at my colleagues but to look closer at my personal contribution to the area that was concerning me. This grew into a deeper sense of responsibility to take a leadership role and not just look to others to make a change. With my extensive professional networks of Māori and non-Māori in the IT

industry, and my desire to instigate a positive contribution, I decided I had to act. Part of that action programme was accepting a role as a critical change agent and undertaking the research for this PhD.

Discovering Māori in the IT industry

This section sets out to identify the growing concerns from a Māori view in IT, and to look at the multiple voices expressing these concerns. Primarily, this is from my personal observations as a Māori who has worked in the industry for many years. I consider such that these emerging concerns as important not just because it aligns with my research, or because it is a question of justice, but a possible signal of positive change needed for both Māori and for the whole of New Zealand. Over the last five to ten years as a Māori IT professional, concerns have grown among my fellow Māori IT colleagues and I that the "Māori voice" is consistently not being heard by the IT industry. This organic process of informal research, investigation and discovery became a common activity during my career, without me actually knowing it until now.

I kept identifying a rising unease amongst Māori professionals as they begin to question the lack of initiatives supporting Māori in IT, and the lack of inclusion of Māori in IT industry discussions. These voices of doubt had not been recorded in any literature. Instead, they are conversations amongst Māori in informal gatherings where they feel comfortable and safe to express themselves. These discussions are at hui (meetings) on marae (traditional Māori gathering places), in community centres, in offices and workspaces, and of course online via social media, email, and messaging. These multiple voices helped crystallise an idea for me that maybe, there could (should, and possibly already) be an independent Māori IT industry in New Zealand. I soon recognised a number of Māori groups out there who I would eventually enlist as participants of this research. With so many diverse areas, I couldn't get everyone (due to availability), but I knew there are so out there who would be non-participants. This may well be one of the limitations of this research study.

Given my background and experience in the industry, listening to the voices of Māori professionals made a good starting point for the research. I chose to work with a range of participants, some had little experience and others had many years of experience in the New Zealand IT industry. Some were new graduates and about to embark on a

career in the industry, while others were more established up to a two who had over forty years of experiences. Most of these participants expressed the consistent message that more Māori are needed in IT. One participant (Hika) of this research spoke of the need for more Māori and female Māori in the industry. Hika's words were

> I've got a daughter who's 12 and off to high school next year. She's on an iPad all day and night. She's into the Kindle, she's a reader. She's been asking for novels. People who read are achievers. She needs to see someone like her, we need more like her [Māori females in IT].

Another participant (Hira) adds to the message "IT for Māori is that we have a lot to offer the industry on a cultural perspective, because we humanise all the activities that go with IT. This is what the industry needs." Their views are echoed in academic writing that points out how incorporating Māori cultural values and worldviews are considered as beneficial for corporate environments (Jolly, Harris, Macfarlane, & Macfarlane, 2015; Kuntz, Näswall, Beckingsale, & Macfarlane, 2014; Thiessen & Looker, 2008). Both Māori professionals quoted above, and the scholars, see the value these messages have, not just for Māori but for the whole IT industry.

While the voices above are from Māori men, other important voices include those of wāhine Māori (Māori women) and rangatahi Māori (Māori youth). The Māori Women's Development Inc (2018) and the Māori Women's Welfare League Inc (2015) have made the recognition of Māori women in leadership roles ever more present in recent years. This is aligned with gender equality that has been a longstanding issue for many years for every area of society. These issues are not unseen by Māori and as such, Māori women, as well as women from other cultures (Carter & Peters, 2016; Greed, 2000), are actively seeking recognition in positions of leadership (Moyes, 2017). Māori youth are also increasingly looking to gain positions of influence and leadership and their voices are growing in the IT landscape (Te Whare Hukahuka, 2019). With the rapid change in technology and the significant impact it has on the world, the younger generation, as "digital natives" (Cunningham, Fitzgerald, & Stevenson, 2005; OECD, 2012; Palfrey & Gasser, 2013; Thomas, 2011), resonate with this world of technology.

Voices from the community are also important both culturally and in terms of practically delivering successful solutions. Feedback from multiple sources such as Māori individuals, groups, organisations, who are typically customers of IT services, communicate concerns regarding the lack of cultural appropriateness. These can help empower positive changes. One example is an observation from my own hapū (sub-tribe), where technology groups had engaged with tribal members, but their approach was from a western delivery model. As a result, the majority of responses to these groups was "I don't understand this stuff, who can help us here?" Fortunately, in this case I was able to assist. This example inspired me to discover what other technology-related areas Māori IT professionals, whether they are connected to the iwi, hapū, marae or not, can provide appropriate assistance. This type of feedback is greater than formal feedback. While formal feedback is given directly to IT organisations, it is the informal feedback that Māori IT professionals receive. While I haven't been able to find scholarly research on this, my personal experiences of it are extensive. Again, it is my experience that Māori customers feel more comfortable with sharing the "real annoying" issues with someone Māori who understands better what they are feeling and really want.

These concerns can be compounded when the Māori IT professional attempts to rectify the issues within their own mainstream IT networks. Unfortunately, they are unable to gain much traction let alone much further resolution. These concerns and frustrations are contributing to a "groundswell" of energy towards a self-determined, independent Māori IT industry grouping. This emerging grouping is taking the form of a more "fluid" ecosystem of small Māori IT businesses. This ecosystem is already forming a structure focussed on Māori iwi, hapū and whānau relationships, characterised by values and attributes inherently governed by Māori worldviews. This enables participants to articulate and share conversations that can lead more easily to action by, with, and for, Māori.

One common pathway for Māori, who are looking for an IT solution delivered by Māori, is for them to approach a Māori IT professional who runs their own IT business and has credibility within a Māori context. In practice, this often means that they are either related by iwi, hapū or whānau connections, or highly recommended by a relative or colleague with whom they already have a strong relationship. In my own experience,

and conversations with my Māori IT colleagues, the motivation to approach a fellow Māori is usually an internal value to help another Māori be successful in the world, especially in a specific industry that is mainly headed by non-Māori. It should be noted however, that credibility varies according to such factors as the connections between professional and customer, and the technical ability of the professional to provide the appropriate solution. Nevertheless, the shared culture and worldview allows each participant a little more "give" in forging and developing the new relationship.

Another pathway involves potential Māori clients approaching Māori IT professionals who work in a particular company. Their aim is to see if the Māori professionals can influence change with the aid of the company's resources and expertise. This pathway is somewhat more difficult for the IT professionals because they are governed and often constrained by the company's internal policies, processes and business focus. In recent years, I have observed an increase of Māori IT professionals leaving established companies to start-up their own businesses. Their focus is to serve the needs of Māori for which their IT professional skills are suited to. I believe that this increase in small Māori IT businesses and the drive towards self-determination is the foundation of an independent Māori IT industry.

There has been, amongst many Māori people (IT and non-IT), an increasing realisation that Māori must do it for themselves and not rely on others (e.g., the government) to provide solutions for the prosperity of Māori. These moves towards self-determination are visible in various Māori business landscapes around New Zealand. Examples include the increase of conferences and fora specifically designed for Māori leaders in IT and other fields. These leadership forums address areas such as the inclusion of youth in decision-making roles, the recognition of Māori women by Māori men in leadership roles, the establishment of specific focus groups for Māori IT specialists (e.g., application developers and infrastructure architects).

The many Treaty settlement claims amongst major iwi across the country also contribute to, and, sometimes, add additional motivation, for these self-determination behaviours. With the increasing speed to settle treaty negotiations between government and iwi, Māori have become more adept at recognising the strategic long-term value of these settlements (O'Malley, Stirling, & Penetito, 2013; Wheen &

Hayward, 2012). They have engaged Māori professionals from the iwi - including the IT professionals – in consultation and decision-making processes. With iwi becoming more financially sound and sustainable, the emergence of a Māori IT industry centred around Māori worldviews, values, iwi/hapū/whānau relationships becomes closer to reality.

As outlined above, my years of experience in professional and personal contexts have given me an advantageous position for analysing and writing about Māori and the IT industry. Not only have I worked in the field, I have worked for different organisations with their own culture. I currently run my own small business (digitaltaniwha.com) and am part of various Māori and IT-related boards. Embedded in all of these different networks and engaging with their diverse perspectives, I believe I am well-positioned to collect and to analyse data relevant to answer the research questions of this study and to recommend informed interventions.

CHAPTER TWO: A JOURNEY BEYOND THE LITERATURE REVIEW

Wāhanga Tuarua: Ka Titiro Ki Muri, Ka Haere Ki Mua

Conventionally, in a PhD thesis, an early chapter would review the literature for the field. The literature review has a long history and continuing scholarship. Jesson, Matheson and Lacey's (2011) *Doing Your Literature Review: Traditional and Systematic Techniques* notes that since Hart's (1998):

> seminal contribution to "doing a literature review" in the late 1980s, the methodology of literature review has advanced at a remarkable pace. The take up of the systematic review methodology from biological sciences into other academic disciplines has added considerably to the debate by introducing a more questioning and critical approach to performing a literature review. (p. 1)

Moreover, the recent second edition of Hart's (2018) *Doing a Literature Review: Releasing the Research Imagination* promotes the literature review as a key catalyst for imagination. Jesson et al. (2011) provide further support for the role of the literature review:

> As an academic task the literature review is where you show that you are both aware of and can interpret what is already known and where eventually you will be able to point out the contradiction and gaps in existing knowledge. (p. 10)

Nevertheless, for this thesis, I concluded, after attempts to conform, that the conventional literature review was not fit for purpose. The challenge began with trying to follow the process of mapping a relatively neglected area, without a clearly defined field and within that field, only restricted research relevant to Māori in IT. Indeed, I found little academic literature (Kamira, 2003; McCarthy, 2008; Roberton, 2011) relevant to much of this particular project. Part of the difficulty arose from the fact that, in seeking to explore the reasons for Māori absences, rather than tangible presences in IT, I found little relevant research. Moreover, the academic material and the other material that did exist, was mainly in the form of evidence and knowledge more

available in such physical forms as blogs, government reports, policy documents, and meeting minutes. These materials do not lend themselves either to traditional literature review scholarship, or to the typical mapping exercise of historic and supportive information generated in the research area.

Additionally, in the process of reviewing, I found the areas that were the focus of existing literature. These areas include: the digital divide, IT skills shortages, women in IT, other indigenous people in IT, and socio-economic challenges (Akama et al., 2017; Burke, 2007; Crothers, Gibson, Smith, Bell, & Miller, 2014; Ramsey & McCorduck, 2005; Schneiderman, 2014; Sylvester, Toland, & Parore, 2017). The literature close to my research attention on how, basically, to get "more Māori into IT", was minimal. Instead, it extended into so many areas outside of my scope that I came to realise that the search was not helpful. Even less helpful, literature reviews in general tended to be underpinned by a cultural worldview that may be part of the problem addressed, rather than a part of finding solutions. This stands in opposition to the appreciative inquiry method employed by this research, where the focus is on what works rather than what does not. In addition, for this thesis, the relevant information and knowledge was more available outside of academic bodies of research.

This research seeks to emphasise how information is gathered and constructed as relevant knowledge not just from the usual sources (e.g., articles, books, electronic repositories) but from experiences, interactions, observations and informal unplanned discussions. That emphasis has a cultural dimension. For example, all of the latter elements have as much importance to a Kaupapa Māori researcher as books and articles have to a western-based researcher. It was a relief to find support for my approach through an explicitly culturally based context in a book called *Wayfinding Leadership: Ground-Breaking Wisdom for Developing Leaders* (Spiller, Barclay-Kerr & Panoho (2015). Spiller et al.'s (Spiller et al., 2015) wayfinding model offered a better way for me, as an emerging Māori researcher, to find my "bearings" within an academic context without losing touch with my culture. Their approach also assists in explaining relevant elements akin to how Māori do the work of understanding. It is almost a way of "pulling up anchor" or "unshackling yourself", from the western

moorings of academia to allow the journey to begin in an organic, culturally aligned and more fluid manner.

By incorporating and adapting their wayfinding terminology, I found a better way to represent its research elements from the placement of participants, sources and themes through to the direction of data analysis. The decision for taking this pathway was because wayfinding can encompass such multiple and shifting environments such as the digital industry, Māori worldviews, and future potential research topics. Designed to adapt to the fast-moving elements encountered as in sea voyages, *Wayfinding* offers more conceptual and methodological agility akin to fast-moving IT environments. I found support for the decision in other authors have found the metaphor and practice to be a good fit for contemporary conditions and contributing to contemporary knowledge. O'Connor (2019) book, called *Wayfinding: The Science and Mystery of How Humans Navigate the World*, for example, uses wayfinding in two ways: one as a metaphor that links with, and contributes to, recent advances in cognitive mapping; and two, as a tool that enables her to travel in the Arctic, the Australian outback and the South Pacific without the need for a GPS.

These publications also link to terminology. In my research, I align with Smith's (2012b) position that the use of Te Reo Māori is important and adapt that perspective to help frame both the overall research and the readers' perspective in this thesis. That includes using Māori terms to depict the relationships between each of the conceptual components and other impactful elements. To underpin this whole framework, I adopt a Kaupapa Māori approach that supports how each conceptual component, is formed and relates to others. The next section describes relevant sections of a Kaupapa Māori approach, which relate to this conceptual framework, as well as two key Māori terms to help the reader understand the positioning of each conceptual actor.

Kaupapa Māori and Māori terminology

The following four key tenets of Kaupapa Māori approach used in this study are that Kaupapa Māori research:

1. is related to "being Māori";
2. is connected to Māori philosophy and principles;

3. takes for granted the validity and legitimacy of Māori, the importance of Māori language and culture; and

4. is concerned with "the struggle for autonomy over our own cultural well-being" (L. Smith, 2012b, p. 185)

Of these tenets, one and four are most relevant to the cultural context of this thesis and its deliberate deployment of vocabulary, contexts and imagery familiar in Māori culture. These will help in keeping the reader attuned to recognising a Māori worldview and enabling participants to make sense of what is happening using Te Reo (the language) and contexts from Te Ao Māori (the Māori world).

In the course of researching this PhD and finding shared worldviews that mattered not just to me, but to many of the participants, I found it increasingly essential to try to share with readers a sense of how Māori see the world, interpret it and interact with it. The use of Māori words keeps the notion of "being Māori" to the front of mind and further validates and legitimises - which is vital in parts of the IT world where it is absent or uncommon – the Māori way of knowing, doing and being (Nepe, 1991; Penehira, Cram, & Pipi, 2003; Pihama, Cram, & Walker, 2002a). This is important to me as a Māori researcher as it enables me to think and write in my language, as well as respect the Māori participants in this study as Māori. To illustrate and operationalise these decisions, the next section introduces two key Māori words that will replace their English equivalent and that I will be using from this point on in the thesis.

The first key word is "kaitiaki" (pronounced "kye-tee-ah-kee"), which is the Māori word meaning a person who is a guide, leader, or mentor (Moorfield, 2011). In this context, I will normally employ it in tandem with digital so that "digital kaitiaki" will henceforth be the terms representing Māori IT professional leaders in New Zealand. The second key conceptual component is captured in the word "waka", meaning canoe or vehicle. Waka has the flexibility to represent different types and sizes of businesses that engage with digital kaitiaki. The rest of this chapter will continue to introduce new Māori terms to guide the reader's understanding of culturally based contexts.

Ngā Mahere Whakaterenga – Navigational Maps

The dearth of literature in this research topic area meant starting without enough relevant literature to help me build a "map" to navigate in this academic journey. This entails risk in unsettling unspoken protocols and making an academic contribution underpinned by sources other than research literature. In Western views, a lot of maps (literature) already exist, however wayfinding helps navigation when there are no written formal maps. From a Māori wayfinding view, there are no maps, only signs and elements to guide your way. Also, in wayfinding, in a counterintuitive fashion to western thinking, the waka you travel on does not move towards its destination, but the destination comes to the waka. This alternative approach to literature recognises non-written sources of information and acknowledges the interactions and all other engagements that guide the researcher to their destination. One example is how at a social or cultural event at a Marae, informal and unplanned discussions evolved into conversations of value that informed my research. These points of value emerged organically as the conversation progresses and can be viewed as "moments of clarity" that are unsolicited but become clear, or even helped me to see how being Māori was implicitly excluded in what could be called "a blinding flash of the bleeding obvious" that might otherwise have eluded a more linear research process.

The guiding of desired destinations to digital kaitiaki is recognisable in their work. The digital kaitiaki waka consisting of products and services, attract potential customers (destinations) to them rather than the waka seeking them out. Not only in formal marketing campaigns and product promotion, but through "word of mouth" referrals and informal discussions where the kaitiaki is promoted by others and not themselves, and customers are drawn to the kaitiaki. Within Maoridom, there is a famous proverb "Kāore te kumara e kōrero mō tōna ake reka", that translates to "The kumara never talks of its sweetness". Most Māori are aware of and live by that proverb which involves being humble, letting others speak of your skills, expertise, and good behaviour, and telling how you are a person worthwhile knowing and meeting (and maybe even employing). So, for this research, navigating the academic and Māori research journey requires approaches that complement and support, to help kaitiaki on their journey.

Te Ao Hangarau – The Information Technology (IT) world

Throughout the world, technology pervades almost all societies. For some communities, technology is in its infancy while, in others, it is already a substantial force that is advancing exponentially. In giving an account of shifting and changing technology trends, I invoke the changing tides of an ocean. Akin to their vast material coverage (oceans occupy 71 percent of the earth's surface) (Hawaii Pacific University Oceanic Institute, 2018), this study will deploy the "ocean" analogy for the similarly expansive IT world. In addition, this aligns with the history of Māori as established ocean travellers and their navigational successes in crossing oceans (King, 2004; New Zealand Ministry for Culture & Heritage, 2006; Spiller et al., 2015). This research also takes other elements of the ocean analogy as representations for IT industry influences and forces. For example, the ocean currents and winds can be used to portray global trends, social and economic changes, government legislation, and technology developments. More specifically, I position ocean horizons as the vision or destination towards which digital kaitiaki guide their waka (businesses).

In line with the imagery, navigational aspects, such as the sky, stars, birds, and sea creatures, are tools for digital kaitiaki to help navigate their waka. Islands in the ocean are temporary destinations, or clients, whom digital kaitiaki encounter on their voyages. They gather information and resources to assist the journey towards their ultimate vision or goal. The digital kaitiaki are kaitiaki (guardians) of waka (businesses) that navigate across the vast ocean (IT world) towards the horizon (the vision or goal). To illustrate the relevance of deepening the imagery, the next section outlines eight categories describing the various types of digital kaitiaki and the waka they navigate.

Ngā Kaitiaki o te Ao Hangarau – The kaitiaki of the IT world

This section categorises digital kaitiaki by the type and size of businesses with which they typically engage. The eight categories of digital kaitiaki are as follows: *kaitiaki kotahi* (individuals); *kaitiaki wawaenga* (small to medium businesses); *kaitiaki whakanui* (large and/or overseas-type businesses); *kaitiaki tekoteko* (businesses led by a Māori person); *kaitiaki taura here* (groups who encourage other Māori); *kaitiaki hāpori* (community and/or regionally focussed Māori IT businesses); *kaitiaki tūturu* (IT businesses that identify as Māori); and *kaitiaki whakapakari* (IT businesses that don't identify as Māori, but have Māori IT professionals within them).

These categories are not, of course, mutually exclusive since kaitiaki may occupy more than one category at a time. They may assist other businesses or activities alongside their main category of activity. One example is how those from the kaitiaki kotahi group who may be, and in some cases actually are, members of the kaitiaki hāpori and kaitiaki taura here groups. Similarly, digital kaitiaki may be part of a group that supports a community or region. In order to clarify the categories, the following paragraphs describe all eight.

The first digital kaitiaki category is **_Kaitiaki Kotahi._** The word "kotahi" means "one". This category consists of digital kaitiaki who work as sole traders or consultants and contract their services to businesses. They contract to any business, regardless of whether it is an IT business or not and look to provide technology-related skills and expertise to add value to those businesses. Because of its qualitative nature and desire for depth, this study selected 12 initial participants for the data collection stage of the field research with a view to adding more as required. In practice, about ten individual interviews had gathered sufficient information, and yielded a varied number of responses. After completing 12 interviews, I had reached saturation point with only repetition of earlier findings and without generating either additional insights or new themes. Table 1 shows the number of participants grouped by digital kaitiaki category (noting they can belong to more than one category). I have included myself in this table, as I am both researcher and participant in this study. In addition, I encountered many other digital kaitiaki who were working as individual contractors or consultants. Accordingly, my decision was to exclude them from the individual interviews process of the data collection stage, but to include them for this study as other "data references" called "Tētahi atu Kaitiaki" which means "one other guardian".

Table 1: Participants by digital kaitiaki category

Category	Number of participants
Kaitiaki Kotahi	4
Kaitiaki Wawaenga	9
Kaitiaki Whakanui	4
Kaitiaki Tekoteko	4

Kaitiaki Taura Here	5
Kaitiaki Hāpori	9
Kaitiaki Tūturu	6
Kaitiaki Whakapakari	10

The second digital kaitiaki category is **Kaitiaki Wawaenga.** The word "wawaenga" (pronounced "wa-why-een-gah") means "medium-sized" in reference to digital kaitiaki who work in small to medium businesses that usually only operate in New Zealand. While these businesses may not be IT specific businesses, they all utilise technology to provide value to their customers. These businesses range from IT service providers, educational organisations, not-for-profit organisations, and groups related to local and/or central government. This category features the majority of participants (nine out of 12), along with three out of the four groups which as described later in thesis as focus groups.

The third digital kaitiaki category is **Kaitiaki Whakanui.** The word "Whakanui" translates into "expand, to enlarge, or to magnify" and is used to represent kaitiaki who work in a large organisation or business that has an international presence. These organisations tend to have a significant presence in New Zealand and are typically IT focussed organisations. My rationale for including this as a category, is to show that they are not just restricted to New Zealand digital kaitiaki but provide guidance internationally.

The fourth digital kaitiaki category is **Kaitiaki Tekoteko**. The word "Tekoteko" (pronounced "tech-or tech-or") translates to "figurehead (of a canoe)" (Moorfield, 2011; Williams, 2000) and encompasses digital kaitiaki who work in a business led by a person who identifies as Māori, or who acknowledges themselves as being of Māori descent. Even though this person may be the CEO, or in a significant leadership position, the organisation does not identify itself as a Māori organisation. I created this category because of its importance in capturing data about digital kaitiaki: both those who are the actual CEOs in these organisations, and some who are part of the organisation because the CEO (or significant leader) is Māori. This aligns with the positive influence of role models (Levy, 2002; Shoebridge & Buultjens, 2012) and

supports the findings on the relevance of role models. This category also supports calls in the literature for diversity in leadership positions (Lewis & Surry, 2012; Lumby & Coleman, 2007). In New Zealand, as commercial businesses are beginning to acknowledge, there is a growing recognition of the importance of Māori in leadership positions as an essential part of diversity strategies.

The next digital kaitiaki category is ***Kaitiaki Taura Here.*** The Māori term "Taura Here" (pronounced "tow-raa-he-re" – note to roll your "r"s) translates to "urban kinship groups" or "binding links". This describes digital kaitiaki members of a group who encourage or support activities that promote Māori participation and culture in the IT world. These groups see Māoritanga as beneficial to the IT industry and its development, as well as providing openings for those Māori wanting to enter the industry, or currently participating in it. This category is popular with digital kaitiaki as it is associated with the essential Māori principle of *manaakitanga* (key Māori value and incorporated in Māori way of life) - the principle of kindness, support and hospitality to others (H. M. Mead, 2003b). All six focus groups are classed within this category. It is significant, not least in terms of Māori helping to lead Māori, that while digital kaitiaki support this principle individually, the organisations they work for do not necessarily have any commitment to, or focus on, promoting Māori participation in IT.

The next digital kaitiaki category is ***Kaitiaki Hāpori.*** The Māori word "Hāpori" refers to "community" or a "section of kinship group". This group of digital kaitiaki focus specifically on supporting their local communities, marae-level activities, and regional development initiatives. They may support this as individual kaitiaki or, as explained earlier in this section, as part of an existing group such as Kaitiaki Wawaenga. In terms of size, this category was the most significant group occupied by participants (8 out of 12), focus groups (6 out of 6) and other data references (7 out of 9).

The seventh digital kaitiaki category is ***Kaitiaki Tūturu.*** The Māori word "Tūturu" translates as "real", "true", or "authentic". These kaitiaki operate in businesses specifically identifying as Māori. They incorporate Māori worldviews and practices throughout their business operations. They uphold Maoritanga (Māori culture) in most, if not all, aspects of their businesses. In New Zealand, it is not compulsory for businesses to officially classify themselves as a Māori business (Ganesh Nana et al.,

2015; Ministry of Business Innovation & Employment, 2015b). Despite it being optional, this research found a number of participants (5 out of 12), groups (3 out of 6) and other data references (6 out of 9), which fitted the classification for this category.

My final digital kaitiaki category is **Kaitiaki Whakapakari.** "Whakapakari" translates to "developing", "refining" or "strengthening" and the category includes businesses with digital kaitiaki working in them, but not necessarily occupying formal leadership positions. These kaitiaki help build the capability of the organisation while also providing guidance to people around them. These businesses may or may not classify themselves as IT specific organisations and can be of various types and belong to different industries. The purpose of this category is to capture those digital kaitiaki who work in many different types of businesses and not just in IT specific ones. This is a significant category with a majority of participants (10 out 12), groups (4 out of 6) and other data references (4 out of 9) fitting this classification.

As stated earlier, digital kaitiaki can occupy more than one category and while eight categories have been identified, it's important, for this research, to highlight each in order of priority. The rationale is to give focus on the key categories to be discussed, and to locate myself within these key categories. This might also help in targeting people and places for interventions to increase Māori participation and leadership in IT. The next section describes the relationship between kaitiaki, waka and the ocean, to consider factors influencing digital kaitiaki, the businesses they work in, and their impact in the IT world.

Ngā Pāhekoheko ki te Ao Hangarau – The relationships with the IT world

In expanding upon ideas triggered by the ocean metaphor, this section considers numerous elements that influence digital kaitiaki while they are guiding their waka to achieve their goals. This thesis uses currents and tides of the ocean as akin to external forces for digital kaitiaki and businesses. Such forces may range from central government legislation, through local and national industry changes, to international developments. Such currents can shift a waka slightly or push it off course significantly. To survive and thrive, the digital kaitiaki must be able to recognise these shifts in currents to adapt the direction of their waka (e.g., stabilising the waka,

changing course, or returning the waka to its original course). To assist with steering effectively, the kaitiaki require assistance from the waka crew (that is a representation of internal forces in a business). These internal forces are as diverse as the weather and may include governance committees, management styles and behaviours, business culture, people, policies and processes.

While kaitiaki are not necessarily captains of the waka, they can, and sometimes do, have significant influence over the decision-makers. They have credibility through expertise and knowledge, and this allows them the advantage of exerting more influence than others. Other signs, signals (Māori term is "tohu") and navigational tools can influence a digital kaitiaki 's decisions. Spiller et al. (2015) describe how the discipline of reading signs while navigating (wayfinding) across the sea is important for the navigator (wayfinder) and their waka:

> Central to wayfinding is the discipline of reading the signs in an unfolding, constantly moving reality, one in which the wayfinder stays open and responsive to changing conditions. Sometimes the "signs" are just a funny feeling that something is not quite right, that it is time to slow the waka down and look around. (p. 128)

The various tohu (signs) are portrayed as the stars, sky, birds and sea creatures, all of which represent indicators of change. For example, understanding the migration patterns of birds and whales, sea colour, wave patterns, cloud shape and movement, can indicate whether land is near or far (New Zealand Ministry for Culture & Heritage, 2006; Spiller et al., 2015). Significant changes in behaviour of birds, sea creatures and other tohu, can indicate either good or bad conditions approaching the waka.

The digital kaitiaki guide their waka towards a specific goal or attempt to achieve a certain vision. On the journey towards this goal or vision, the waka will encounter landmasses or islands. These represent clients, customers, and suppliers that the waka engages with on the way to their ultimate destination. The islands are where the waka acquire resources to sustain the journey (for example, clients who pay for services, and suppliers who provide operational necessities). The islands can also be

the attainment of short-term goals that build the waka's experience, credibility and capability.

Finally, the ultimate goal or vision of the waka is the horizon. For this study, it is termed "Te Pae Tawhiti", which means "the distant horizon". The term "Te Pae Tawhiti" comes from the Māori proverb "Ko te pae tawhiti, whāia kia tata; ko te pae tata, whakamaua kia tina" which translates to "Seek out distant horizons and cherish those you attain" (H. M. Mead, 2003a, p. 257) . This popular Māori proverb is used frequently by New Zealand businesses (Māori and Non-Māori), as a vision statement or a guiding principle in strategic documents and reports (Career Moves Trust, 2006; Nga Pae o te Māramatanga, 2018; Rotorua Te Arawa Lakes Programme, 2013). The imagery of a waka sailing towards the horizon is a representation of a business working towards achieving their ultimate goal.

Having identified the initial players of the research focus in this chapter, chapter three considers how to engage the players within a research process, and the nature of that process, or those processes. Continuing with the ocean metaphor, the next chapter outlines how we "prepare our thesis waka" ready to embark on the next stage of its research journey.

CHAPTER THREE: WAYFINDING WITH KAUPAPA MĀORI METHODS

Wāhanga Tuatoru: Whakariterite Te Waka

After acknowledging the difficulties of following traditional literature review approaches, chapter two drew inspiration and guidance from Spiller et al.'s (2015) research on wayfinding. In addition, it drew from both the learning those researchers gained from the knowledge and practice of indigenous navigation and from Kaupapa Māori research approaches. It then adapted knowledge from all three sources to organise and name groupings of digital kaitiaki. This is important because the positioning of kaitiaki within certain categories shapes how the thesis will address and approach different groups during the research. In addition, chapter two moved on from reviewing literature to methods by foregrounding the importance of Kaupapa Māori research approaches in general, and to this thesis in particular. As well as further justifying the selection of Kaupapa Māori research as the best approach for this study, chapter three will set out the specifics of participant selection and the processes used in collecting data.

Kaupapa Māori research

For me as a Māori researcher, and for my major participants, who are all of Māori descent, Kaupapa Māori research methodologies simply make sense. Historically, as a research approach, it evolved as a consequence of frustration and concern over western research methodologies (Bishop & Glynn, 1999; L. Smith, 2012b). Māori academics have specifically criticised western research for describing problems in Māori society rather than looking at ways to promote change. They also criticised specific researchers for conducting culturally inappropriate research (Bishop & Glynn, 1992; G Smith, 1992a; L. Smith, 1992b) and challenged western research approaches in general, and those who devalue and undermine the authenticity and validity of Māori knowledge (Bishop, 2005; Bishop & Glynn, 1992, 1999; L. Smith, 2012b) in particular. In the words of Bishop (2005):

> Traditional [western based] research has misrepresented Māori understandings and ways of knowing by simplifying, conglomerating, and

commodifying Māori knowledge for "consumption" by the colonisers. These processes have consequently misrepresented Māori experiences, thereby denying Māori authenticity and voice. Such research has displaced Māori lived experiences and the meanings that these experiences have with the "authoritative" voice of the methodological "expert," appropriating Māori lived experience in terms defined and determined by the "expert.". (Bishop, 2005, p. 111)

Other studies have shown that this misrepresentation, and lack of acknowledgement for Māori culture within parts of society, have led to the perpetuation of deficit theorising of Māori (Hynds, 2008, 2010; Graham Smith, 2012a). Graham Smith (2012a) goes further to state that deficit theorising unjustly positions Māori as "lacking, inadequate and problematic" (p. 11), and contributes to negative theories and theoretical paradigms against which Māori are evaluated in research (Alfred & Corntassel, 2005; Bishop, 2013; Glynn, Cowie, Otrel-Cass, & Macfarlane, 2010; McInerney & Flowerday, 2016). These lines of inquiry continue and contribute to cyclic behaviour, so that the negative research findings promote the next round of research questions in an aim to resolve the previously reported findings, and so on, and so on. Walter and Anderson (2016) have identified how this continuous cycle of deficit research is taken into policy-making reports and portrayed in statistical statements. As the cycle continues, those, in turn, influence decision-making forums and forge media and public perceptions.

Māori academics have made scathing critiques on the grounds that the large quantity of existing research on Māori has failed to produce beneficial outcomes for Māori. Numerous studies and government reports demonstrate that Māori are overrepresented in negative statistics regarding health, education and employment in spite of a long history of research on Māori in these areas (Berryman & Eley, 2017; Stubbs, Cochrane, Uerata, Hodgetts, & Rua, 2017; Tompkins, 2017). The latest COVID-19 pandemic prompted specific action plans for Māori because they have continually been identified as a higher risk group of society due to a number of negative socio-economic influences (Ministry of Health, 2002, 2020).

For almost three decades now, the work of two of the most prominent Māori researchers in New Zealand, Graham and Linda Smith, has awakened the academic community of the value of the Māori voice, values and worldview. They have written extensively about the problems of using western research methodologies with Māori communities (G Smith, 1992a; L. Smith, 2012b) and countered the challenge by promoting the use of an alternative model based on Māori philosophy and principles known as Kaupapa Māori research. Kaupapa Māori Research has a clear purpose underpinned by the belief that such research should: set out to make a positive difference for the researched community; be collaborative and empowering; and bring about transformation. As noted in chapter 2, Graham Smith's (2012) four tenets of Kaupapa Māori: 1) are related to "being Māori"; 2) are connected to Māori philosophy and principles; 3) take for granted the validity and legitimacy of Māori, the importance of Māori language and culture; and 4) are concerned with "the struggle for autonomy over our own cultural wellbeing" (2012b, p. 185).

In addition, Māori philosophies and Māori knowledge inform Kaupapa Māori research approaches that also draw heavily from Te Ao Kōhatu (the ancient Māori world) (Pihama, 2001; Taki, 1996). These approaches recognise that Māori have a distinct way of viewing the world (Nepe, 1991; Penehira et al., 2003; Pihama, Cram, & Walker, 2002b). Moreover, Kaupapa Māori research is political in challenging contemporary structures that maintain and perpetuate forms of colonial oppression. Kaupapa Māori researchers seek to redress injustice, highlight inequalities and bring about transformational praxis. This is usefully summarised by Graham Smith's (1997) observation that: "Kaupapa Māori as an intervention strategy, in the western theoretical sense, critiques and reconstitutes the resistance notions of conscientisation, resistance and transformative praxis in different configurations" (G Smith, 1997, p. 119). Another eminent Māori scholar, Mason Durie (2003), similarly highlights the importance of culture and language to Māori advancement and so aligns with the Smiths' Kaupapa Māori principles. Durie (2003) states "that unless there were a strong cultural base and a revitalisation of language and culture, then much of the talk about tino rangatiratanga and self-determination would have a hollow and pointless ring" (p. 243).

As Linda Smith (2012) later noted, Kaupapa Māori approaches encourage the use of Māori knowledge, language, philosophy, and principles when conducting research. It is important for this research that communication channels remain open for participants to actively communicate and contribute. In line with Smith's suggestions for Māori-centric research, I accept and promote the use of Te Reo Māori and English. The use of participants' cultural language can help some participants to feel comfortable and at ease when communicating concepts and terms that cannot be easily translated or described in English. This thesis advances upon this by implementing the following six principles that underpin the Kaupapa Māori approach (G Smith, 1992a): Tino Rangatiratanga, Taonga Tuku Iho, Ako Māori, Kia piki ake i ngā raruraru o te kainga, Whānau, and Kaupapa. The next section explains each of the six kaupapa Māori principles in greater detail and outlines how they apply to this thesis.

Tino Rangatiratanga - the principle of self-determination, refers to the right to be Māori, to live as Māori and be in control in determining what it is to be Māori (Durie, 2003). This became a vital part of my research to encourage Māori participants to determine their own future through the lens of culture and information technology. As a Māori IT professional myself, I understood that IT environments are predicated on non-Māori values and culture, and so it was important to set a context for participants that held the potential for them be their authentic Māori selves. The second principle is introducing Taonga Tuku Iho. This principle of cultural aspiration matters because it acknowledges the importance of Māori ways of knowing, doing and being. Accordingly, this study acknowledges, respects and values the worldview and background of the Māori research participants. It invites participants to share their lived experiences and commits to respecting these in the interview process and any other research interactions.

Even early in the fieldwork, it emerged that this context of respect was vital in practice because it encouraged participants to freely share the Māori aspects of their personal journey and how it led to where they are now. Principle three is Ako Māori. This principle of culturally preferred pedagogy refers to using teaching and learning practices that are typically Māori. It not only recognises practices that may not be traditional in origin – as much of IT is clearly not – but allows that they still have some

appeal to Māori. In practice, this meant exploring the mentoring and learning experiences of the research participants so as to gain insights into experiences that made a positive impact on them.

The practice was actioned with a view to being able to learn from their successes and to recommend them among other interventions and practices designed to achieve the study's declared research objective of "increasing participation of Māori in the IT industry." While that objective implies that increasing Māori participation will benefit both Māori and the IT industry, I also introduced and deployed the principle of <u>Kia piki ake i ngā raruraru o te kainga</u>. This principle of socio-economic mediation emphasises that Kaupapa Māori research must be of positive benefit to Māori communities. In effect, by using Kaupapa Māori influenced interventions, this study aims to encourage more Māori participants and more Māori-friendly participation in the IT industry, with the purpose to benefit a subset of that industry's audience, Māori and their communities.

The principle of <u>Whānau and Whanaungatanga</u>, which focuses on the value and importance of relationships, follows on naturally. I (as the researcher) alongside the participants, form a whānau of interest that will reflect the notion of whanaungatanga. This whānau of interest refers to a natural grouping of people who have similar views, thoughts, and approaches to an area underpinned by cultural and personal commonalities. For example, the common aspects such as ethnicity and cultural experiences combined with an interest in the IT profession. Finally, in setting out the last of the six principles, we come to the most important for this study, which is <u>Kaupapa</u>.

At the core of this project, Kaupapa refers to the collective vision and aspirations of Māori communities. The research endeavours to bring together the voices of Māori IT professionals, and to acknowledge collective aspirations to create positive change in the IT industry, for the benefit of Māori communities. These aspirations, which align with the overall purpose and the previous five principles, are configured to enable the participants to share their authentic knowledge and experiences, and to assist in developing and experimenting with interventions that positively impact an industry and Māori society.

The personal is cultural and methodological

In a preface reflecting on the state of the field in the prestigious fifth edition of the *Sage Handbook of Qualitative Research* (Denzin & Lincoln, 2018)*,* co-authors and co-editors, Denzin and Lincoln (2018) observe that it is time for the field: "to open up new spaces, to decolonize the academy, to create new spaces for indigenous voices . . . . We need to find new ways of connecting persons and their personal troubles with social justice methodologies" (p. 12).

In her individual chapter, Kovach (2018) follows through on her editors' reflections by devoting the entire chapter to "Doing Indigenous Methodologies" (pp. 383-417). It is important to note, as Erickson (2018) does in another chapter, that these innovations stem from widespread dissatisfactions with many of the conventions of traditional research:

> It does seem to me that the full-blown realist ethnographic monograph, with its omniscient narrator speaking with an apparent neutrality, as if from nowhere and nowhen – a subject who stands apart from his or her position – is no longer a genre of reporting that can be responsibly practiced, given the duration and force of the critique that has been levelled against it. (p. 122)

Although this thesis is not an ethnography, Māori have undergone considerable colonialist ethnographic approaches by the kind of disembodied academic that Erickson (2018) critiques.

As part of resisting that genre, this researcher acknowledges himself as a situated researcher raised with strong values. I openly acknowledge that a Kaupapa Māori approach reflects my principal worldview, and gels with my mindset as a researcher, as well as fitting, to a greater or lesser degree, the worldview of the research participants. With this approach, I am committed to ensuring that the principles are valued and legitimated. In addition, my aim is to assist all readers to better understand how the participants and I interpret the world around us since, although it may differ significantly from other worldviews, this influences the way in which we engage with the world. Increasingly, as this century unfolds, more and more qualitative research

and participatory action research adapts to accommodate many aspects of Māori and indigenous thinking and approaches (Coghlan & Brydon-Miller, 2014b; Creswell, 2009; Denzin & Lincoln, 2005; Reason & Bradbury, 2006, 2008).

Qualitative research and participatory action research are congruent with three major features of Kaupapa Māori. These include power sharing models, researcher and participant relationships, and transformational change. The following table sets out the key characteristics of Kaupapa Māori (KM), qualitative research (QR), and participatory action research (PAR) and indicates how they align with each other in ways that strengthen the validity and robustness of Kaupapa Māori research approaches.

Table 2: Alignment of KM, QR and PAR research approaches

Common aspects	Kaupapa Māori	Qualitative research	Participatory action research
Power Sharing Models			
Participant worldview is acknowledged	◆	◆	◆
Voices of the participants are crucial	◆	◆	◆
Participants involved in all aspects of research process (i.e. devolution of power)	◆		◆
Researcher and participant relationships			
Relationships are critical	◆	◆	◆
Trust is built and maintained	◆	◆	◆
Collective vision is established	◆		◆
Collaborative approach is important	◆		◆
Principles of whānau / whanaungatanga is evident	◆	◆	◆
Transformational change	◆		◆

The next section will describe the use of qualitative approaches and participatory action research, along with the relevant data collection and analysis methods.

Qualitative research

This study fits into Denzin and Lincoln's (2005) definition of qualitative research as " a situated activity that locates the observer in the world" (2005, p. 3). It, like other qualitative research (Bogdan & Biklen, 1992; R. B. Burns, 2000; Cohen, Manion, & Morrison, 2000), is concerned with meaning and the way that people make sense of their lives. One of the major advantages of using a qualitative research approach is that of gaining an "insider" point of view so that the researcher is able to see things that can remain invisible to an outsider and also draw from their own situated experience (Bogdan & Biklen, 1992; Creswell & Poth, 2017; Dwyer & Buckle, 2009) and language and speaking practices as in Krog's (2018) "In the name of human rights: I say (how) you (should) speak (before I listen)" (p. 845).

Given my background and my extensive prior experience with working in the technology sector, this approach justified my access to specific knowledge and personnel to enable increased understanding with respect to the area under investigation. Aligned with this, my study uses a set of interpretive practices to better understand the world of Māori IT professionals in New Zealand with the aim of establishing an improved understanding and clearer identification of key attributes that promote Māori participation within the IT industry. More specific qualitative methods used in this research include action research, appreciative inquiry, focus groups, observations and conversations/interviews (Coghlan & Brydon-Miller, 2014a; Denzin & Lincoln, 2005; MacDonald, 2012). These are described in greater detail in the section below.

Methods

As previously mentioned, this study is guided by three main questions:

1. What are the key drivers for Māori participation in IT?
2. What has been done well to promote these key drivers?
3. What could be done better to promote these key drivers?

The study employed semi-structured interviews and focus group interviews to address the first and second question. For question three, I planned to opt for what I saw as the more reflective and the more action-oriented process of action research. However,

as this study progressed, the nature of the findings guided me to understand the need for reflective processes for all three questions. An example is that during an observation of a group hui (meeting), I realised external factors (such as government policy and industry trends) heavily influenced the group conversation. While the conversation was about an industry change, I (and the group) discussed the positive and negative impacts of these potential changes, for Māori. This highlighted to me that not only the direct topic was to be discussed, but how this topic emerged and what potential it had to help or hinder Māori participation and/or promotion.

It should be noted that a formal ethics approval process was adhered to as per the Waikato Management School Ethics Committee guidelines (University of Waikato, 2020). The ethics application (WMS 15/94) was approved on 31 July 2015 before any interviews or engagement with participants started.

Semi-structured interviews

One of the main forms of data collection was semi-structured interviews. I chose this form because my Kaupapa Māori research approach is designed to enable participants to converse in a way that would make them feel comfortable. Through this conversational-type approach I set the conditions for participants to open up and share more of their knowledge and experiences. This made more sense than a prescriptive interview process, that had a preconceived view of what they knew. Another advantage of semi-structured interviewing is how the researcher collects comparable data across subjects (Bogdan & Biklen, 1992). These semi-structured interviews take the form of conversations and generative questioning that align with appreciative interviewing techniques (Bushe, 2007) and a Kaupapa Māori research approach.

Accordingly, while semi-structured interviews have a set of prepared questions, the interviews themselves have the potential to evolve into conversations that flowed into subjects and areas instigated by the interviewees rather than following the lines of thought in the prepared questions. This intended outcome was what often happened in practice. Interviews continued in an organic way so much that one or two questions led into long conversation that sometimes lasted for two hours. The wide-ranging and often participant-led conversations opened pathways to such useful identifiable relationship links as workplace or whānau connections (Bishop, 2013; Bishop & Glynn,

1999; Rewi, 2014). The build-up of rapport between participant and researcher created space that, in turn, enabled wider and deeper conversations with richer data. For example, some discussions moved into personal details about life experiences and how these influenced the participant to make choices, which led them into their current career positions.

As the research progressed, I came to understand that such unexpected outcomes of the interviews emerged, at least in part, through the Kaupapa Māori approach. Moreover, the expanded and enhanced conversations that resulted often moved from group visualisation to participant aspirations, before continuing into the construction of propositions that allowed participants to articulate their ideal future in greater detail. One example is when one participant wanted to create a space for more Māori to engage in e-sports. He identified this emerging digital industry as an area for young Māori to channel their passion for online gaming into an industry that could be beneficial, both economically and socially for Māori. He setup an e-gaming centre to do just that. Finally, in line with action research, the interviews led to the formation of ideas of change where participants committed to taking action, and/or had completed actions before the research was completed (Reason & Bradbury, 2006, 2008). It was encouraging for me as I moved into action research to observe how the appreciative inquiry and Kaupapa Māori frameworks frequently helped to bring out action learning pioneer Reg Revans' (2011) maxim that "there can be no learning without action and no action without learning" (p. 11).

<u>Focus groups</u>

Focus groups typically involved participants who shared a common experience or characteristics, and who gather together with an aim to discuss and possibly create change. In the deployment of focus groups, this thesis followed the findings of both McLoughlin (2004) Coghlan and Brydon-Miller's (2014b) that such groups work well within action research studies. Moreover, this research involves Māori IT professionals who have their ethnicity (as Māori) and their experiences in IT industry, in common. The focus group approach also aligns well with two principles of Kaupapa Māori theory. The principle of Whānau/Whanaungatanga (fostering healthy relationships) and the principle of Kaupapa where the participants build a collective philosophy to create change for the benefit of Māori.

In line with traditional Māori behaviour, this research favoured face-to-face focus group meetings and discussions. Nevertheless, it also supported participation by those unable to attend the group discussions in person because of the frequent option to contribute via online methods (e.g., video/teleconferencing). For Deakin and Wakefield (2014), "the online interview should be treated as a viable option to the researcher rather than just as an alternative or secondary choice when face-to-face interviews cannot be achieved" (p. 604). Videoconferencing was a technology familiar to all the participants because of its use in their role as IT professionals. I had initial concerns about losing aspects of the conversations because they were not face-to-face (kanohi ki te kanohi, a preferred way for Māori to meet) (O'Carroll, 2013b, 2014). However, as the interviews progressed, these concerns proved unfounded. Many of the group discussions had members participate via videoconferencing, as their preference (please note that audio recordings and physical notes were only taken in these meetings where permission was given). While the majority of the meeting concerned one main topic of discussion, there were times when there was more than one conversation happening in the group. In such instances, the recordings helped retain accurate and more comprehensive records.

Of the 12 semi-structured interviews, four of them were held via (one-to-one) videoconferencing, and of the eight focus groups, two were available by video conferencing. Participants were in another city, and this medium was of their choice because it suited them in terms of their availability and needs. All discussions were recorded (either digitally or in writing) and made available to the participants to check for factual accuracy.

Document analysis and archival research

This study drew upon on and analysed a range of information including official and unofficial documents, observations or meeting notes, on-line and offline texts, memos and written documents. It also undertook archival research as part of the study, particularly as the expectation was that much of this type of information would be electronically available, due to the proliferation of digital information, and the nature of the jobs held by participants in the study. Existing research and library databases held at universities (e.g., library catalogues, research commons) and the online searchable

database - Google Scholar were the first information repositories explored. Although Google scholar may be considered just a web search engine, studies support that it has become another repository to turn to when other sources returned limited results (Harzing & Alakangas, 2016; Martin-Martin, Orduna-Malea, Harzing, & Delgado López-Cózar, 2017). As a consequence of these processes, the primary data from the participants were better contextualised for analysis.

<u>Field observations and reflections</u>

Field observations and reflections also served as important processes in this study. In today's world, people are busier than ever with numerous other priorities and so time for hui is particularly valuable. Technological advances change rapidly and while it's supposed to lessen the demand on peoples' time, it could be argued it increases the demand. Additionally, Māori prioritise attending culturally based hui (e.g., marae, hapū or iwi-based hui) that create more demand on the available time they have. Understanding all of these pressures, this data collection method, served as a good option for busy Māori IT professionals.

Some participants were observed in collective discussions that had both technology and Māori interests. These discussions included industry presentations, subject matter fora, Māori-specific hui and advisory groups, general workshops and seminars. This approach allowed me to develop an intimate understanding of a particular setting or group, and how Māori engage in these settings, by being a participant. It should be noted that observations and reflections continued well beyond the standard data collection timeframe allotted. Since I am involved in continuous Māori IT professional hui, my initial data and understanding continued to be enhanced. In order to manage this ongoing enrichment of data, I drew on aspects of grounded theory.

Qualitative data analysis

The analysis drew from the grounded theory technique of thematic analysis. Bryant and Charmaz (2007) note that the grounded theory technique or method is "designed to encourage researchers' persistent interaction with their data, while remaining constantly involved with their emerging analyses. Data collection and analysis proceed simultaneously and each informs and streamlines the other" (p. 1). This method fitted this research well because of the simultaneous interaction between data collection

and analysis complements the appreciative inquiry approach. It allowed for continuous addition of data, analysis, and reflection throughout the study. This was important because I was still actively involved in IT industry-related fora, which included some of my existing participants, and some who were a result of the snowball sampling process mentioned earlier. Apart from collecting all the data for this thesis once the doctoral research was approved, this study did not follow a set specific time for its data collection, analysis and reflection. I recognised that information would be coming to me in various forms (e.g., formal and informal settings), and that analysis and reflection would happen as my research knowledge was growing during the study journey.

When it came to formally analysing the data, the process involved "coding" data into general concepts, and then grouping them into categories. These categories are a collection of similar concepts from which a potential theory or theories maybe proposed (Bryman & Bell, 2011). The coding phase and subsequent categories would be addressed iteratively as they were informed by new data inputs (e.g., through new interactions with participants and fora) highlighting new undiscovered categories. I found that my experience confirmed Bryant and Charmaz (2007, p. 81) claim that by going back over the data, you gain a new image of the data. Or in other words, that coding is a question of constant comparison. This technique helped me address research question one and two by a process of continuous review. For example, the drivers initially identified would evolve each time I would go back and re-evaluate them. This evolution of concepts and categories enriched my findings and analysis stages and enabled a deeper and more meaningful understanding of influences behind the categories.

Part of the analysis stage included all interview and discussion data transcribed and analysed using the NVivo software application. NVivo's features allowed greater management and analysis functionality when handling the large amounts of data. The NVivo application also supports the grounded theory features of coding and categorising (Bryant & Charmaz, 2007; Hutchison, Johnston, & Breckon, 2010). Emerging categories clustered around empowerment and the "ideal" environment for the industry. As noted earlier, my generative questioning was recorded electronically and since all the participants were technically proficient and experienced in project

management, they were familiar with a number of industry software applications I used to record and track project progress. The adoption of these recording and tracking methods aligned well with participatory action research and the Kaupapa Māori principle of whānau, where both researcher and participants have an active role in how the research progresses.

In order to address the third research question, I implemented, analysed, reviewed, and adjusted to the findings as they emerged. This process adopted the reflective cycles of participatory action research to understand the impact of the drivers identified. This process also highlighted any contextual factors that had not previously been identified (Cooperrider, Whitney, & Stavros, 2008; Kemmis & McTaggart, 2005).

Action research and appreciative inquiry

Although action research has numerous definitions (MacDonald, 2012; Reason & Bradbury, 2008), most proponents agree that it is essentially a participatory and democratic process that involves action and reflection in pursuit of transformative change. This is usually in relation to an individual or community issue (Reason & Bradbury, 2006, 2008). Even in action research not called participatory action research, the participatory aspect of action research is fundamental to this study and dovetails with Kaupapa Māori approaches to research.

In this part of the study, I shifted my role as researcher into a more active and collaborative role with research participants (Coghlan & Brydon-Miller, 2014b). Building on the work of Cooperrider and Whitney (2005), as part of the action research process, the technique of appreciative inquiry (AI) was used to gather qualitative data. Appreciative inquiry has four key phases, namely discovery, dream, design, and delivery or destiny, and this study used all of them during data collection. The rationale for using all four was that each phase helps construct a potential action plan for the delivery of the participants aspirations (Bushe, 2009, 2011; Cooperrider & Whitney, 2001, 2005; Ludema & Fry, 2008; Ludema, Whitney, Mohr, & Griffen, 2003).

In the discovery phase of the AI cycle, the thesis identified the benefits for Māori working within the IT industry. It also highlighted the main strengths of the IT industry in New Zealand context. The goal of this phase was to understand what has been

done well and what is currently going well within this area (Cooperrider & Whitney, 2001, 2005). For phase two, the dream phase, research participants were asked to visualise an ideal future based on the benefits described in the discovery phase. The design phase encouraged the research participants to turn their dream statements into possibility statements. These statements go beyond visualising and offer proposals for change that can be tested or completed (Bushe, 2011; Cooperrider & Whitney, 2001, 2005). Finally, in the delivery or destiny phase, participants make a commitment to take action consistent with the possibility statements from the design phase (Bushe, 2011; Cooperrider & Whitney, 2001, 2005; Ludema et al., 2003). For more information about action research and appreciative inquiry, please refer to Appendix A.

Participant recruitment and selection

This study used purposive sampling as part of its participant recruitment and selection process. Purposive sampling requires research participants to be aware and understand the social challenges of the study (Bryman & Bell, 2011). Since the participants of this study were IT professionals of Māori descent, it was highly likely that they were aware of the issues that face Māori who work within the IT environment.

Access to the participants was established through my professional networks, and as an IT professional with over twenty years' experience in the industry, I had developed many professional relationships with other Māori in IT. These relationships are kept active through my involvement in numerous specialist Māori IT groups. It is through these relationships that I made initial contact with potential research participants and invited them to take part in the study.

The study also embraced the use of snowball sampling. In snowball sampling, researchers ask participants to put them into contact with other people who may qualify for inclusion in the study, who are otherwise hard to find or unknown to the researcher (Cohen et al., 2000; G. R. Sadler, Lee, Lim, & Fullerton, 2010). This proved to be very beneficial as participants shared a number of contacts who were included in the data collection phase. This outcome also emphasised the Kaupapa Māori principle of whānau and whanaungatanga, and the importance of relationships. Moreover, since most of the participants and the researcher were/are part of active IT groups, the interaction between the researcher and participants was collaborative and

cooperative. The action of valuing relationships in this manner helped to ensure all members contributed responsibly and these aspects resonated with the principle of Kaupapa and the underlying philosophies of participatory action research.

Participant Demographics

This study is predominantly a qualitative study, but quantitative data is also necessary to help understand the range of participants who were engaged. This study focusses on increasing Māori participation in IT, and so it was important to engage with Māori IT professionals first and foremost. I strongly believe that this study had to focus on Māori voice to bring about increased Māori participation. I actively sought participants of Māori ethnicity or who identified as Māori. It is acknowledged that some participants had more than one ethnic background (e.g., NZ European, Pacific Island, etc) and this did not exclude them from the selection or interview process. All participants identified as Māori before beginning the interview process and indicated their tribal affiliations, as shown in Table 3. Recognising the participants tribal affiliations acknowledges their ancestral links as Māori in line with Kaupapa Māori research (Bishop & Glynn, 1999; Pihama et al., 2002a; L. Smith, 2012b). It can also lead to understanding what influences (if any) there may be on their personal worldview. It is worth noting that future studies could well look at Māori participation in IT at a tribe and sub-tribe level.

Table 3: Interviewees' tribal affiliations

Name	Iwi Affiliation(s) - Tribe	Hapū Affiliation(s) – Sub-tribe
Anaru	Maniapoto, Tūwharetoa	Te Ihi Ngā Rangi
Hika	Maniapoto, Waikato	Ngāti Matakore, Ngāti Tamaoho
Hira	Ngāti Porou, Ngāti Raukawa	Ngāti Konohi, Ngāti Whakatere
Hohepa	Ngāti Awa, Tainui, Maniapoto	Ngāti Pukeko, Ngāti Hamua
Hurae	Tainui, Ngāpuhi	Maniapoto
Karaka	Ngāti Porou	Ngāti Konohi
Kimo	Ngāti Ranginui	Pirirākau
Niwa	Waikato, Tainui	Ngāti Āmaru, Ngāti Tīpa, Ngāti Tahinga
Paraone	Ngāti Whātua, Ngāti Porou, Ngā Puhi	Te Roroa, Te Whānau o Hunara
Piki	Ngāti Porou, Ngāti Toa Rangatira	Te Aowera
Pita	Te Arawa, Tūhoe	Ngāti Whakaue, Ngāti Pikiao, Ngāti Rere
Terewai	Ngāti Kahungunu	Ngai Te Whatuiapiti, Ngati Rangikoianake

Subsequent demographic data points of interest were gender, age and generation. The purpose of these demographics was to understand whether gender and generational influences had an impact on the participants worldview, and if so, to what effect. As previously mentioned, Māori worldview is important, but I should also acknowledge other key influences such as their gender and generation. The thesis derived the age ranges used to determine the generation information from Abrams and Von Frank (2013) and Dimock (2019). This study focuses on the low numbers of Māori participation in IT, equally so, there are other studies attending to low numbers of women participating in IT, and to initiatives implemented to move towards improving those numbers (Cohoon & Aspray, 2006; Hamilton-Pearce, 2009). Tables 4 and 5 show interviewees by gender, and age and generation, respectively.

Table 4: Interviewees by gender

Male	11
Female	1
Total	12

Table 5: Interviewees by age and generation

Age	Count	Generation
20 – 24 years old	1	Generation Y (born 1981 – 1995)
25 - 29 years old	1	
30 - 34 years old	0	
35 - 39 years old	2	Generation X (born 1966 – 1980)
40 - 44 years old	4	
45 - 49 years old	1	
50 - 54 years old	1	Baby Boomers (born 1946 – 1965)
55 - 59 years old	2	
Total	12	

As stated earlier, there were 12 interviewees for the semi-structured interviews, which consisted of 11 male and one female. It was hoped that more females could participate in the individual interviews, unfortunately due to lack of availability that was not possible. However, more females were noted in the focus groups and observation

phases. Table 6 shows the comparison of male and female for the focus groups and the situations where observations were made.

Table 6: Male & female - focus groups and observation situations

Description	Total no.	Male		Female	
Focus Groups					
Te Rōpū Ngā Tapuwae	6	4	67%	2	33%
Te Rōpū Hauhake	8	5	63%	3	38%
Te Rōpū Reanga Hou	5	3	60%	2	40%
Te Rōpū Ngākaupai	8	4	50%	4	50%
Te Rōpū Ao Matihiko	4	3	75%	1	25%
Te Rōpū Matanga Matihiko	7	4	57%	3	43%
Te Rōpū Tohutohu	7	6	86%	1	14%
Te Rōpū Herenga Waka	28	22	79%	6	21%
	73				
Observation situations	**30**	16	53%	14	47%

At the time when the semi-structured interviews were held, three participants were self-employed contractors working in technology-related fields, two participants were full time employees as technology experts in the education sector, two participants were full time employees in technology sector, one participant was a student studying in the technology field, and the rest were either contractors or full time employees as technology experts across the agriculture, health or governments sectors. The participants' occupation status is recorded to acknowledge that they were active, whether directly or indirectly, in the IT industry. This study does not analyse any correlation between employment type and participation rates in IT but recognises this could be an area for future research.

This chapter justified the legitimacy of a Kaupapa Māori research approach, including as part of a comparative table with such other research approaches as appreciative inquiry and participatory action research. The data collection methods used in this study support these approaches, not just through qualitative methods but also showing quantitative data in a way that leads to an analysis of participant understanding and background influences (e.g., tribal affiliations, gender and generational data). The next

chapter aims to elaborate on, and analyse, the data collected and connect it to the research questions of this study.

CHAPTER FOUR: CASTING THE NET

Wāhanga Tuawhā: Whiua te Kupenga

This chapter will elaborate on the background to the data collection before beginning to identify and thematise the findings. It will introduce the participants of the semi-structured interviews and focus groups. These participants will henceforth be referred to as digital kaitiaki. The chapter will then provide a rationale for formal and informal questioning, and an outline of what I expected to find from the data. From there, explanations of the overall data collection process, and organisation of data into initial codes, nodes and themes, meanwhile providing insights into the value of digital kaitiaki narratives relevant to the research questions of this study. Finally, the chapter will propose key themes and concepts in preparation for further analysis and scrutiny. Throughout this chapter, I draw upon my own experiences, implicit knowledge and my network of professional contacts that are the focal points of the data collected, and the source of key findings presented in the following sections.

Selection criteria and relationships

I recruited and selected these digital kaitiaki from my extensive network of professional relationships, as a result of twenty years in the IT industry. In the course of that career, it is important to note that I engaged with both Māori and non-Māori and people who worked both directly and indirectly in IT. During the selection process of the digital kaitiaki, in line with that background, I applied a cultural approach followed by a subject specific approach. My rationale for these two approaches was to align with the overarching research topic of increasing "Māori" participation in the "IT" industry.

From a Māori culture perspective, I chose digital kaitiaki where I had built a relationship of trust, through various collaborative activities, all of which evolved over a long time period. These were not just acquaintances but professional relationships where we could contact each other in both formal and informal situations. Some of these relationships extended beyond professional to cultural contexts (e.g., iwi, hapū or marae settings). In line with my methodology, I made protecting these relationships and trust central to my actions as a researcher. In line with knowledge gathered from my experiences, and many shared experiences – in both positive and negative

situation – with these digital kaitiaki, I had grounds for believing that they would be open and honest during our discussions. It was also important that both participant and researcher felt comfortable sharing aspects that may seem difficult, so I felt it incumbent to allow for a level of vulnerability in myself, and on their part, and to take responsibility for caring for their vulnerability.

In relation to more specific criteria, digital kaitiaki were chosen if they were active in the IT profession and identified as Māori. From my professional relationship with digital kaitiaki, I could confirm that they met these two criteria. The fieldwork augmented these links with a more direct approach (e.g., invitation to interviews) because my interactions with them did not necessarily go into detail about their age, experience levels or industry sectors. Through previous informal conversations, I understood that even though prospective digital kaitiaki had wide-ranging backgrounds, I sought to ensure that my knowledge of their experiences was up to date to confirm their relevance to the study.

For diversity (Bordas, 2012; Small, 2018; S. Smith, 2017), and also for exploring offshore option for future Māori, I included digital kaitiaki with backgrounds that involved significant international experience, working with multiple and diverse cultures. This was also of interest because of the dynamics of various cultures (Bordas, 2012) and more specifically, how the digital kaitiaki managed their own culture in different environments. In seeking to understand these experiences, my rationale was that they could inform interventions applicable to a range of environments with different cultures (e.g., Māori versus non-Māori, technology-centric versus people-centric; community-centric versus business-centric).

My research also contained digital kaitiaki with backgrounds that involved local contexts, rural environments, and working for not-for-profit organisations. These digital kaitiaki were using their technology skills and expertise to provide positive outcomes for their communities. These experiences are important to me as a Māori researcher. I sought to understand the local situation and challenges facing these digital kaitiaki, and how they are addressing these through their skills and through their engagement practices, as well as seeing what works for them. It will become clear by the conclusion, that these experiences informed the interventions.

Finally, in assessing potential participants I discovered two distinct behaviours common to all of them. Firstly, they all had a willingness to help Māori whenever they could, and wherever it was within their capacity to do so. Secondly, all of them not only had an understanding of their cultural affiliations, but were actively engaged in increasing their knowledge, language or involvement. These two behaviours were especially important to me as I was looking for behaviours that would encourage more Māori participation, or at the very least, be supportive. This also grew in importance as I came to the conclusion that understanding the challenges of maintaining their cultural identity was crucial within IT environments since IT environments are not sensitive to, or appreciative of, any other cultures (Alston, 2013), and that would include Māori culture and perspectives.

Occupation and job type

When assessing potential participants, I looked at the types of positions they held and began with those in senior leadership positions (e.g., chief information officer, IT manager, technical manager). The purpose of this was to look at decision-making positions that could support Māori to be successful in IT, and/or positively influence IT organisations to become more favourable for Māori to work in. The aim was to see if there were opportunities for Māori to enter the IT field, or encouragement given to those Māori already in the field, to excel further in the business. However, given the relative paucity of Māori in the industry who were identifiable by leadership positions, I also chose to draw from those who had informal leadership roles but may not have held formal leadership positions. These positions would include people who remained in technical roles but had reasonable experience. Not all participants wanted to "move up" to leadership roles but had opportunity to share their wide experience with those around them. The aim was not just to widen the pool of potential participants, but, also, to plant the seed, if not the idea, that many of them were already de facto leaders, mentors and role models.

My rationale for this research is in line with leadership literature. It is encapsulated in the title of Raelin's (2003) *Creating Leaderful Organizations: How to Bring Out Leadership in Everyone*, and contends that leadership could, and should, be given and taken, from many diverse positions. This applies whether it comes from

designated senior management and executive level, or from those at low entry-level positions. This is still a contested concept but is deployed as being particularly useful in areas without a high quota of relevant formal leaders, as in the arena of this research. The focus on leadership-influencing roles also assisted in identifying characteristics that had, consciously or not, assisted participants to elevate themselves to the positions they currently held. In line with my action research approach, the objective was not just to acquire knowledge but, as part of the process, to also seek to develop leadership qualities and leadership thinking in all participants. Each interview seized any chance to encourage participants to view themselves as leaders, to aspire to formal leadership positions, and to appreciate their own already existing leadership qualities and skills. I also explored such possibilities cooperatively with a view to eliciting and identifying characteristics that could be incorporated into the development of appropriate interventions for the future.

Accordingly, the selection included positions that allowed digital kaitiaki who influenced others in their specific IT environments. These positions may not be obvious IT roles because the job title was not specifically technical (e.g., support advisor, programme developer, research assistant) but they provided IT support in some way to people or within an organisation. Again, by looking at the many different job types, the hope was to explore the various levels of influence that could impact on Māori participation in IT.

A total of 12 digital kaitiaki were chosen for this study because of their wide array of skills and experience. They came from various roles and levels within the IT industry. My rationale for selecting this array was to gain an understanding of the personal experiences of being Māori in a mainstream industry like information technology. I also sought to relate to successes and challenges for each digital kaitiaki and again this was undertaken consciously to develop interventions promoting and addressing the common successes and challenges, respectively. Having identified the need for wide-ranging perspectives this selection involved digital kaitiaki from a variety of roles in the New Zealand IT industry. They held positions ranging from operational and technical to strategic and executive roles. The decision to choose them as research participants, was taken to provide Māori IT professionals' views from entry to senior level positions. Their inclusion helps extend this study's gaze across multiple levels and aims to assist

in the development of more holistic interventions to help increase Māori participation in IT through the broad range of coverage.

One setback, in terms of the demographics of the digital kaitiaki, was the lack of interviews with women. Due to lack of availability and other commitments, this study was only able to interview one. It should be noted however that in the years since beginning this research journey, there has been more initiatives around recognising and encouraging women into the IT sector. I strongly recommend that future research consider how to fill this gap by looking at these initiatives through interviewing more women and attempting to assess how, and how well, the initiatives address Māori women participation rates in the IT industry. Another potential challenge for substantial data collection for analysis was the relatively small size of my group of interviewees.

However, although there were only 12, by using Kaupapa Māori and appreciative inquiry as my research approaches and by searching for saturation, I became confident that the number of digital kaitiaki were providing enough data of depth. The value of those two approaches, encouraged both deep and rich responses, and the amount and quality of information gathered was more than enough during the data and thematic analysis stages of this research. This was evidenced by the appreciative inquiry process continuing to draw out more evidence and experience-based responses, so much so that the interviews themselves took an average of 1.5 to 2 hours long and followed a conversational style rather than just a question and answer format. This "free-flowing" style allowed both interviewee and interviewer to elaborate on multiple tenets of a question and response.

In addition, the language used emerged as an important factor in the interview style. As a result, increased understanding arose as I was working with digital kaitiaki from different age groups, levels of IT industry experience, as well as various levels of Māori cultural knowledge. I came to realise that all these factors influenced the way I would talk with each kaitiaki and what type of language I would use. At the most elementary level, I did not assume that every kaitiaki was fluent in Te Reo Māori and so I used it more sparingly where I could see they were more comfortable in using Māori terms but not fluent. Regardless of their level of Te Reo, I took care to show great respect

for each participant and I looked after their knowledge, known as "mōhiotanga", in a culturally respectful way.

As a measure of my seriousness in the endeavour, I undertook advanced studies in Te Reo Māori to be able to expand my fluency and improve cultural participation in the research. Unexpectedly, this added skill worked well with English technical jargon because it gave another way of describing areas, in a form that was familiar. It would often help a formal style shift to an informal one. This attention proved rewarding since the kaitiaki were culturally supportive contributors to the interview process. As the range and richness of interview material illustrate, digital kaitiaki responded well and gave all the nonverbal signs of feeling comfortable in being able to speak in the ways they wanted to speak, and not be restricted by any perceptions of formal academic interview protocols. It helped that they were familiar with me as a digital taniwha. In addition, due to my professional relationship over a long period of time, they felt comfortable with technical jargon knowing that I understood what they meant, and they didn't have to explain it to me. The following section shows the context of how each digital kaitiaki were engaged as interviewees, group participants or informally observed.

Digital Kaitiaki, Ngā Rōpū Matihiko and Kōrero Ōpaki

Along with the 12 digital kaitiaki I selected for the semi-structured interviews, my research included eight focus groups (Ngā Rōpū Matihiko) and 20 informal observations (Kōrero Ōpaki) of digital kaitiaki. For the 12 digital kaitiaki, their narratives were collected for each interview and then grouped by age in with their generation. This was an unlooked for finding. Retrospectively, it arose because I found that the perspectives shown correlate to similar experiences during the upbringing of each kaitiaki. These experiences included the influence of whānau role models, the importance of education and employment, the development of a personal work ethic, and the feeling of being responsible to make a positive change for the next generation.

Before I started this research, I had already been active in working to increase Māori participation in concert with others. The Ngā Rōpū Matihiko for this study, for example, were already established. This does not mean that the groups are all alike. Each rōpū have specific kaupapa (topics) which are similar but diverse enough to provide

different and varying results. Some of these rōpū were formed recently (within the last 18 months) while others came together over a number of years. The key issues of accessibility and trust to these rōpū posed no problem because I was a member of each one. For the sake of the academic integrity of the data collected, I put it on record at this point that I did not form these rōpū and I am not the lead person (chairperson) for any of them. Prior to beginning the study, I sought and was granted, permission from the rōpū to be included in this study, with the provision that the names and purpose of each could not be easily identified by the reader. To honour that undertaking, which is understandable as there are few Māori IT groups and many of the members know each other from this small network of professionals, I have used pseudonyms and the description of each contains only material relevant for this study and even that is generalised. The name of each rōpū is shown in Te Reo Māori (the Māori language) because this research employs Kaupapa Māori principles such as legitimising Māori language in research writing. Also, it normalises the use of Te Reo Māori with IT-related terms, in which potential Māori IT professionals can see their culture reflected in an area they may be interested in. The eight rōpū are as follows:

- Te Rōpū Ngā Tapuwae (refers to a group of 'sacred footsteps')
- Te Rōpū Hauhake (refers to a group of 'the harvest')
- Te Rōpū Reanga Hou (refers to a group of 'the new generation')
- Te Rōpū Ngākaupai (refers to a group of 'the good heart')
- Te Rōpū Ao Matihiko (refers to a group of 'the digital world')
- Te Rōpū Matanga Matihiko (refers to a group of 'digital experts')
- Te Rōpū Kaitaunaki (refers to a group of 'supporters')
- Te Rōpū Herenga Waka (refers to a group of 'where the canoe is tied up/moored')

In addition to the interviews and focus groups, a number of other digital kaitiaki were observed as my continued involvement in the IT industry. These observations were part of informal hui (meetings) and conversations, referred to now as Kōrero Ōpaki. They are included in this research because the conversations observed were relevant to this study and inform further discussion about Māori and technology. The number of kaitiaki were limited to 20 as this was a more manageable size when it came to capturing key conversation points. It should be noted that all these conversations were

recorded in writing only and not digital recordings. This was the preferred method because these were informal observations and not semi-structured interviews or focus groups. For this chapter, the narratives from kōrero ōpaki will be left for the further analysis in the next chapter, but they are included here to highlight the wider network of digital kaitiaki, and the increased number of female digital kaitiaki available. The following tables show those observed by kaitiaki category, and by gender.

Table 7: Digital Kaitiaki observed by category

Name	Kaitiaki Kotahi	Kaitiaki Wawaenga	Kaitiaki Whakanui	Kaitiaki Tekoteko	Kaitiaki Taura Here	Kaitiaki Hāpori	Kaitiaki Tūturu	Kaitiaki Whakapakari
Atareta	✓	✓			✓	✓	✓	✓
Kiriwai		✓	✓		✓	✓	✓	
Ruhi			✓	✓				✓
Mere	✓	✓		✓	✓	✓	✓	
Nikau	✓	✓		✓	✓	✓	✓	
Amari	✓	✓		✓	✓	✓	✓	
Pania	✓	✓				✓	✓	
Heeni	✓	✓	✓	✓	✓	✓	✓	
Ngahuia	✓	✓	✓	✓	✓	✓	✓	
Herewini	✓	✓			✓	✓	✓	✓
Hune	✓	✓				✓	✓	
Anahera	✓	✓			✓	✓	✓	✓
Piripi			✓		✓	✓	✓	
Rangi		✓	✓		✓	✓	✓	
Rewi		✓	✓	✓				
Moko	✓	✓				✓	✓	
Paora	✓		✓		✓	✓		✓
Kara				✓	✓	✓		
Tio		✓	✓					
Moana		✓	✓	✓	✓	✓		

Table 8: Digital Kaitiaki observed by gender

Gender	Number	Percentage
Male	11	55%
Female	9	45%
Total	20	100%

Questions – formal and informal

Whether it was during the semi-structured interviews or in the more informal settings of the focus group discussions and observations, all questions were designed to encourage digital kaitiaki to explore issues about which they cared or felt strongly about. These questions ranged in areas such as: what encouraged them to choose IT as a career, what factors had influenced their careers, what were their experiences with cultural differences (e.g., Māori and IT industry), and what did they think would encourage other Māori to enter the IT profession. Through appreciative inquiry, these questions were starters for conversation and allowed the digital kaitiaki to draw on any aspects of their lives that they felt contributed to answering the question. This approach allowed me to gather a range of distinctive information. In analysing the responses, it became clear that they: were underpinned by experiences connected to each other; were intertwined with positive and negative influences; were prompting self-reflections; and were foregrounding cultural and social capital aspects. In short, these narratives included accounts of how the experiences had helped shaped them as people. In addition to contributing many rich details important to this study, these participants made an impact on me as a digital taniwha, and the cultural and personal significance enabled me to acknowledge and respect digital kaitiaki as my cultural and professional mentors, mentees, and peers.

What I expected to find

A key driver for me on this research journey was to create change in an industry where Māori are underrepresented. I also had the idea that to bring about the recognition of Māori values and culture might be a benefit to the IT industry, especially when that industry is expanding its customer base to a global audience, of which Māori is a part, with particular affinity to other indigenous peoples. These drivers underpinned my frustrations of seeing less and less Māori in fora that promote technology leadership and success, when I know a lot of Māori who are working hard for their customers

(and communities) using technology in innovative ways. My expectations were that talking with these digital kaitiaki, they too were looking for positive change for Māori, and had examples for specific areas that highlight the need for change. These expectations are supported by the data gathered but the findings go further to describe specific areas for change.

Furthermore, I had expected kaitiaki to share their views on the value of Māori culture, and how it has benefited them personally and professionally in IT, along with possible suggestions of a separate IT industry for Māori. While I did expect some of them to put their culture on hold while they were establishing themselves in a predominantly non-Māori sector, I didn't expect to find that some had not even considered their culture as particularly relevant to the IT environment. An additional expectation I had was the increasing of Māori role models in IT. To increase Māori participation, I think it crucial that Māori be seen as change agents and inspire others to follow. The research's expected and unexpected discoveries are detailed more in each of the initial themes later in this chapter.

Initial Codes and Nodes

I inputted the conversations generated from the appreciative inquiry process into the NVivo software application in order to undertake an initial coding exercise. The rationale for this was to manage the sheer quantity of qualitative data and find the emerging themes through an iterative process. This process required going through all transcribed data and highlighting key concepts repeated throughout all interviews and conversations, as well as key words that emphasised a sentence or concept.

As seen in the Figure 1, the output of this is an initial group of codes and nodes, where the code is the high level name (e.g., positives, challenges), and the nodes (and sub-nodes) are groupings of common narratives (e.g., node = What works well, Motivation, sub-node = industry adding value for Māori, greatest motivation).

Figure 1: Initial Coding and Nodes

Positives	Challenges	Traits and Behaviour	Interventions and the Future

• What Works Well
  • Industry adding value for Māori
  • What Māori do well in the industry
 	
• Māori Culture and IT
  • Corporate vs Māori Culture
  • Māori identity
  • Taking responsibility
 	
• Motivation
  • Encouragement from Home / marae
  • Who encouraged them
  • Greatest motivation
  • What got you into IT
 	
• Roles and Role Models
  • Advice from others
  • Whānau in IT
  • Other Māori in IT
  • Māori IT roles
  • Role models / Mentors
 	
• Support
  • Networks & Relationships
  • Recognition from work
  • Other support networks
	• Digital Divide
	  • Accessibility
	  • Affordability
	
	• IT Culture
	
	• Māori recognition
	
	• Support
	  • Difficulties
		• Personal Qualities
		  • Being different
		  • Communication skills
		  • Soft Skills
		  • Skills and interests
		  • Strengths
		  • Training
		  • Tutu's / inquisitive
		
		• Values and Beliefs
		  • Religion and culture
		  • Spirituality
		  • Financial values
		  • General Values
			• Future of IT
			• Innovation
			• Intervention
			• Rangatahi (Youth)
			• Women

Initial Themes

To assist with the multiple levels of codes and nodes, these were further thematised into categories, namely Major, Minor, and Marginal Outlier categories (Figure 2). The major category are those responses that were expected and identified by most of the kaitiaki. The minor category are the responses expected but only a few kaitiaki identified. The marginal outliers are the unexpected responses by some or few of the kaitiaki.

Figure 2: Major, Minor and Marginal Outlier theme categories
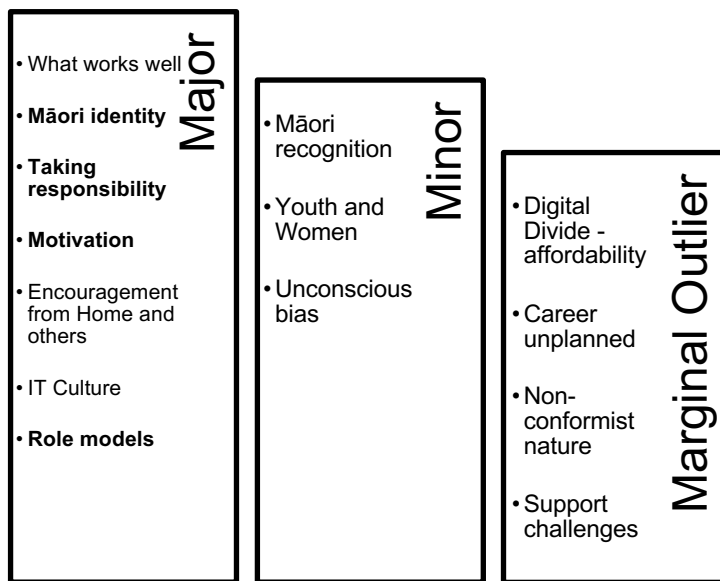
These theme categories were constructed from numerical and value judgements of the digital kaitiaki narratives. The numerical judgements consist of analysing the number of kaitiaki who had the same or very similar narratives to the research question. The number of similar narratives placed into a theme were identified by the words that occurred most often, either individually or as part of a sentence indicating a concept. For example, the term "Māori" used with other key words like "values", "culture", "industry" and "whānau" were highlighted as similar narratives and placed in the category "Māori identity". The table below shows results from NVivo, of the most occurring key words that contributed to four main themes.

Table 9: Occurrence of key words

Key words	Frequency of Occurrence
Māori	1261
Industry	548
Technology	345
Values	343
Culture	328
Whānau	298
Rangatahi / Youth	272
Education	259
Role Models/Models	246
Responsibility	238
Whakapapa	217

In addition to the frequency of words, the theme categories only include narratives from kaitiaki who belong to two specific age generations; the "Baby Boomers" – those born between 1946 and 1965, and Generation X – those born between 1966 and 1980. The rationale for using an age generation lens is because the majority of narratives were from these two generations (10 of 12 kaitiaki). The majority of narratives from the remaining two kaitiaki (born after 1980), were different from the others, and so they were excluded from the initial themes. However, since this research does look to increase Māori participation in the IT industry, their narratives will be included in the following chapter for further scrutiny. There is a possibility that those narratives will contribute to targeted interventions towards youth or the next generation of Māori.

The process using value judgements consisted of analysing the content of the narratives to compare and contrast the underlying influences of the narrative. For example, a kaitiaki may mention views on unconscious bias but emphasises more on a specific area like institutional racism. These value judgements have directed my analysis to include, or exclude, certain narratives because of the strength of their importance to the research questions.

Theme A: Māori identity

<u>Generation X</u>

The narratives of four digital kaitiaki from generation X (born from 1966 to 1980), contribute to this Māori identity theme. Anaru, Hira and Hika are aged between 40 and 44 years old and have a minimum experience of 20 years in the IT industry that range from Māori and non-Māori communities, education, infrastructure and software development fields. They were born when technology was becoming more prevalent in society and so they all had experience of technology entering the home, school and workplace. Karaka, while a few years younger than the other three, is included because for his age, he has excelled in his IT career and escalated to high IT management positions.

Karaka and Hika talk about organisations that support Māori identity in the workplace which encourages them to stay in IT but also recognise the benefits of that identity in a workday.

I do take pride in coming into an industry that is primarily pākehā (European/non-Māori person). With pākehā culture and pākehā views and be able to be Māori and do the job well, and be recognised for it, is something I do take pride in. I was lucky enough to get my feet into a Māori industry, that gave me the opportunity to gain some skills behind me and then all I needed to do with companies outside, is adapting to the business. That's something I take pride in is being the minority but being good as the minority. (Karaka)

Karaka's stance is one of success without compromise, proving to himself he can work in a principally non-Māori industry. He confirms that you can maintain your Māori identity within a pākehā environment, do a good job and be recognised for it. This narrative shows the supportive role of organisational culture. In Hika's case, he established his skills in a supportive Māori context first, and then utilised those within non-Māori contexts.

Tell you the truth. I'm really fortunate to be working for a Māori organisation that values whānau and our principles. Really really fortunate. I can only speak coming from that. It's wonderful. We're in a good working environment. The core values we know. We work our best and we go beyond. It's not just a 9 to 5 job. That's the difference between us and a lot of other organisations. We're really focussed. (Hika)

This shows the importance of organisational culture and more specifically, that Māori organisations already underpinned by Māori values, make a receptive work environment for burgeoning digital kaitiaki. This drives Māori to work beyond a normal working day, and go that "extra mile", because they feel valued when their identity is valued. As Hika puts it:

in our space we've got the Māori core values - fabulous. Because our client base are predominantly Māori, they know we're there to do a good job and we're committed. Other people tried to do that; they'd get nowhere. They'd be scrutinised but with us its different.

This shows that alignment of value-systems between customer and kaitiaki are favourable to mitigating barriers of mistrust and promoting positive engagement. The attribute of a values-based organisation is well documented in the literature and will be introduced for analysis in this research too.

Karaka and Hika show that Māori identity can be advantageous and powerful for IT organisations and their staff. They highlight the benefits in non-Māori and Māori organisations and the positive impact on an organisation's target customers. Both kaitiaki describe supportive aspects from their work environments, noting recognition from others and an organisational culture that nurtures Māori values. The strength from this nurturing continued for Karaka when he moved from a Māori environment to a non-Māori one.

Anaru and Hira emphasise the importance of ensuring your Māori identity as a person in IT, but also as a business that identifies as Māori:

> Yes, we've always defined ourselves as a Māori company. I think that really helped and also this project is a goodwill project and not for commercial benefit, but there were commercial tools. (Anaru)

> I would say there's many social factors that point to why Māori people are heading this way. Again, it's to do with our culture. It's bringing people back to the whānau and working on the social aspect of it. We take pride in socialisation and whānau as important. (Hira)

These narratives encourage Māori to be strong in their identity and indicate that support systems, such as whānau, other Māori, and in fortunate cases, organisational culture, are available to them. As kaitiaki from Generation X, they grew up during times of increased Māori social consciousness and cultural awareness such as Te Reo Māori language revival, Treaty of Waitangi protests, advocating Tino Rangatiratanga and Māori rights in society. This generation actively embraces the significance of cultural identity and promoting beyond the typical Māori-whānau realms (e.g., from marae and sports to workplace and public spaces). Generation X'ers portray an

energy of inner strength which will be helpful when it comes time to make change in somewhat difficult contexts.

<u>Baby Boomers generation</u>

Two of the three digital kaitiaki from this generation share their views in relation to Māori identity. Hohepa and Hurae were born between 1946 and 1965 and both have over 30 years' experience in IT from a wide range areas and job types (e.g., operations and leadership). Their perspectives are interesting because they highlight a sense of responsibility needed from the IT industry and Māori as individuals. This may or may not be a result of this generation's characteristics. These kaitiaki note that not only should Māori seek support for their identity within the industry but be cognisant of it within themselves when engaging with other Māori.

Hohepa notes how the western culture (and referencing to the IT culture), needs to fit with his Māori identity and culture. He shows that culture evolves and adapts as society changes. This fits well with the rapidly changing IT sector and indigenous communities adapting alongside these changes (Fu, Pietrobelli, & Soete, 2011). As Hohepa observed:

> then you go to university and taught how the western world worked, for me it was all about where that western thought fitted into what my background and experiences was all about. I was always looking for the comparison so then I could appreciate both cultures.

> We (Māori) are evolutionary in our approach, our words have transitioned ourselves not just as colour or race but as an underlying protocol of people. That's what I think we are good at. The version of Te Reo today is trying to fit into the world we are in today, its evolving. I think IT is a great analogy of who we are and as a people, we understand what it means to fit together as opposed to "let's find a whole lot of words that go together." (Hohepa)

Meanwhile Hurae notes that Māori identity is important not just for the individual but when engaging with other Māori: "Looking across the Māori sector and seeing what he can do. Something of value. It's challenging when working with your own people,

but you must have some identity/whakapapa reference point that Māori can relate to you with."

Hurae reinforces the significance of tribal connections. Coming from an older generation where Māori introductions were aided through stating ones "pepeha" – the reciting a person's tribal affiliations to others and making possible tribal connections with them. The use of "pepeha" as a cultural introduction is seen more now in non-Māori contexts since society's acceptance of Māori culture has improved. In a mainstream context, introductions are verbal or with business cards, so using "pepeha" for digital kaitiaki, is one way of legitimising Māori identity within the IT environment. The analysis chapter will elaborate on the added benefits of this.

Ngā Rōpū Matihiko (Focus Groups)

While the majority of the focus groups support Māori identity as a key component for digital kaitiaki, Te Rōpū Ao Matihiko are particularly supportive of this. They are vocal about Māori legitimising their identity and sovereignty in all areas of the industry.

> We have the right to be who we are, where we are and use our own language. This (IT) is not owned by one part of society, even though its pākehā dominated doesn't mean they own it. We need to make our positions clear and if they're not ready for it, then we need to make our own spaces. (Te Rōpū Ao Matihiko)

Whether individually or as a collective, there are digital kaitiaki who are motivated to solidify a place for Māori in IT. The narratives above support my expectations that Māori want to make change within the current mainstream IT sector, and there is a need for a separate Māori IT industry. While my preference (as the digital taniwha) is for the latter, both of these approaches need to be explored further.

Theme B: Taking responsibility

Generation X

Three digital kaitiaki (Niwa, Kimo and Anaru) highlight their views on how Māori should take responsibility if they are to make changes in the IT industry, changes within a specific IT area, and/or using technology for the betterment of Māori. Niwa is the only female digital kaitiaki who participated in the semi-structured interviews. Her vast

national and international experience meant her perspective about responsibility comes from a wider global view of Māori. This influenced my judgement of the value of including this theme and her narrative. Kimo, aged between 35 and 39 years old, is an entrepreneur who challenges the status quo for Māori and IT, and so again his views brought an added dimension to the data. Anaru focusses on a particular part of IT that also resonates with some of the groups of Ngā Rōpū Matihiko. All of the narratives below provide potential insights into the development of targeted interventions.

Niwa and Kimo highlight Māori responsibility to become more involved in the IT industry and make changes in that industry. In Niwa's words:

> I'm a perpetual optimist. I have this thing that the art of the possibles is gonna be whatever we make of it. If it means orchestrate different pathways for kids or if it means we have to take the bull by the horns and say ok (to a key decision-making group), enough doing what you're doing, we've got it all here. Let's do it once and do it well, instead of replicating in our respective rohe (region) and get minimal results. Yes, we know the property game, but what we don't do really well as an industry is IT stuff, so let's join our resources for Māori and do it ourselves. (Niwa).

Similarly, Kimo observes that: "Going back to the industry in general, I think it's got a lot to offer. It's up to us to make sure we go out there and innovate on what is on offer" and sees "this study is about Māori creating change but it's also the responsibility of the industry. It shouldn't just be Māori doing this, what is the industry going to do, are they backing our Māori businesses?".

Since Niwa and Kimo have their own children, I can recognise that they want to create change that will be beneficial to their children in the future. They both express that it's within Māori capability and resources to make change, but also urge that the industry itself is responsible for change. In line with Kerr's (2013) book, *Legacy: 15 Lessons in Leadership,* the driver for change is leaving a legacy for their children, grandchildren and next generation of Māori.

Anaru takes the view of responsibility further and refers to the specific IT area of intellectual property (IP). Anaru's narrative is an example of a project that has multiple parties involved, and he inspires Māori to define their own way in this area. This "call to action" for Māori, should be considered in the development of this study's interventions:

> Not one group owns the IP and it's a shared responsibility amongst the parties. We make it to work with the various systems. the best thing to do for Māori is for them to make it their own, customise it for their area. (Anaru)

An expected finding was Māori asserting their self-determination over information created about them and/or for them. Along with Anaru, Te Rōpū Ngākaupai also raise the importance of Māori having control and access of information about them. Te Rōpū Ngākaupai state it strongly:

> if there is information about us, then we should have a say on how that information portrays us. Too many times we (Māori) are shown in a negative light because of the way information is displayed. Even if it's positive information, somehow, they (Non-Māori) show it in a negative way. We need to change the narrative, the voice about us."

Te Rōpū Ngākaupai's focal points of conversation centre around how Māori information is portrayed in written and verbal forms. They understand that information about Māori is predominantly shown in a negative way, which often ends up giving a negative perception of Māori in the public eye. This area of responsibility will be analysed further in the next chapter.

Baby Boomers generation

Hurae and Terewai have established families with adult children, who in turn have children of their own. Their narratives highlight values of good work ethics, responsibility to their whānau, themselves and the next generation of Māori who may want to enter the IT industry. As Hurae puts it, "it's the legacy that I want to leave, for my grandchildren and great grandchildren" and Terewai takes a similar position:

I always remember thinking – I'm here to make life better for those coming after me. So in my job for example, and using the values I learned as a kid on the marae and particular in the shearing sheds, you always did a good job because the person coming after you, you're trying to make it better for them so that its easier for them... I operated all throughout my career, is making things better, there's always somebody coming along and you're never indispensable, there's always somebody coming along because you are preparing the way for those who follow.

As someone who has seen many changes over his career, Terewai is aware of how temporary things can be, and so makes an effort to do the best he can while he is in his position. He maintains that it's about "doing a good job" in language similar to comments by other digital kaitiaki. This indicates to me that responsibility to whānau is more than just working in IT, that it's the responsibility of the kaitiaki to ensure that the whānau reputation remains intact or even elevated. There is pressure here on kaitiaki to perform well beyond the task at hand, and to maintain a good reputation for their whānau. As Terewai puts it: "Whether we (Māori) are collaborative as much as we think we are, whether the IT industry is collaborative as we think it is, I keep thinking what can I do? how can I help?".

Hurae also gives an example where Māori achievement is the responsibility of all (Māori and non-Māori alike). He states many times that non-Māori refer to the few Māori in the room, instead of really engaging with Māori as a whole group, and not just those immediately available in front of them.

So again, I'd love to see is have more of my work colleagues - non-Māori, to come on board with our Māori framework because a lot of them don't. So, I think here, a lot of it here is tokenistic. They tick the boxes. It is about them engaging. This is everyone's responsibility. (Hurae)

Previous kaitiaki have mentioned how supportive some non-Māori organisations have been towards Māori culture and values. Hurae is only one of two kaitiaki who express the indirect patronising or biased behaviour against Māori, in the IT sector. The unexpected mentioning of "tokenistic" and even racist-type behaviour is the first

confronting data seen in this research. While noted by only two, the terms are powerful enough in nature to be considered for further analysis in the next chapter.

<u>Ngā Rōpū Matihiko</u>

Six of the eight Ngā Rōpū Matihiko support responsibility as key for Māori and the IT industry. As collective groupings of Māori (and non-Māori) IT professionals, the group's purpose always include a responsibility to their target audience. These groups ensure a culture of customer responsibility and service, otherwise they find themselves excluded and irrelevant.

Te Rōpū Ngā Tapuwae and Te Rōpū Ao Matihiko, are strong advocacy groups for the increased participation of Māori in the IT industry. With members from around the country and an average of over 30 years in the industry, these groups share clear and similar narratives about Māori responsibility and changes that should occur. Te Rōpū Ngā Tapuwae notes:

> our objective is to help increase Māori participation in the technology sector. We have a responsibility and duty to assist change wherever it supports our objective. We need to invest time, money and our energy into these changes, so let's use our collective power to make those changes happen.

Te Ao Matihiko expands by charging Māori to activate change in their areas of interest and speciality.

> it's about us creating space for Māori IT leadership and sovereignty, based on our (Māori) values. Leading in our respective spaces, we need to bring our people together and show that through a Māori lens, we can be awesome. We can make this our own, different but ours and that's ok. Be it marae, global, infrastructure, academic, entrepreneurship or whatever, it will take courage, leadership, and support from all of us.

All of these narratives not only support but emphasise that Māori should take active responsibility to create change. Whether the drivers are creating a legacy for the next generation of Māori; creating change within Māori and non-Māori organisations; or

using collective methods to create a new leadership models in various sectors, there are signals that any change should come from Māori first and foremost. Notwithstanding assistance from non-Māori, all conversations in the interviews and focus groups were more about Māori taking charge. They concurred in the belief that, ultimately, it was up to Māori to instigate change because it is for them in the end.

Theme C: Motivation

Generation X and Baby Boomers

This theme draws narratives from the majority of all digital kaitiaki and so for this section the data is portrayed under both generations. Most of the kaitiaki from generation X, and all kaitiaki from the Baby Boomer generation, provide narratives, that are vocal about creating a positive change for the next generation of Māori. This could be attributed to the fact that all of these kaitiaki had children, and the Baby Boomer generation were older in age and had greater established whānau networks (e.g., grandchildren, great-grandchildren). Hohepa and Terewai make particular reference to making a difference for their children and the next generation, and that their motivation is more than just about themselves:

> the motivation is for tomorrow's kids, and the passion/my strengths is to keep them motivated and move forward and take tomorrow in their hands and make it happen. That's my strength and motivation, to keep looking at tomorrow for them and helping them to try and get there.

The focus here is on getting the next generation to be successful in a rapidly changing world. Hohepa (a Baby Boomer) alludes to the view that the next generation are not as motivated as they should be. Maybe this is because generation Z are born at a time where digital technologies are the norm and, supposedly, are accessible and affordable to all. Accordingly, it doesn't require added effort to use technology beyond what is presented in front of them. For a Baby Boomer to suggest to a digital native (gen Z) to be more motivated toward technology is a significant finding. As Terewai notes:

> I don't remember who said it to me but my life here is not for me, it's to make life better for those who are following on from me. So, my grandparents made

life better for my mother, my mother and father made life better for me. My job is to make life better for my children and their children.

Shifting to specific groups of the next generation, Hurae (Baby Boomer), Kimo and Hira (generation X) talk of the motivation they get from helping Māori students succeed in IT education. These narratives are significant because they show the importance of encouraging and nurturing those Māori who have chosen IT as a career pathway but are experiencing difficulties:

I like to see our Māori succeed. It's got to start at the grass roots. Somebody asked me why do you want to do your PHD, is it because you want to be an educator, do you want to do research?, none of that, I wanted to do it to say that if I can do it so can you, to be a role model, that's all. I look at our Māori students, and the reason why is my passion is in education. I love teaching, I love to be able to be in front of that class. I love to see students come when they are 'raw material' and then by the time they leave in 3 years, and then what happens to them in the next 5 /10 years' time, that progression. (Hurae)

Oh, it pulls on the heart strings, it's all worthwhile, that achievement. I get that when I see their family too. That's what keeps me coming back all the time, it's not just about me, it's about the student, it's about everybody. Then you sit back, and you see where they're heading too and what's happening with them and watching the pride in the family. (Hurae)

I always say when I meet with new students, I always say where do you see yourself in 5 years' time, and where do you see yourself in 10 years' time, and I share my journey with them. I tell them I started my education at 30 and where I am now and where it's taken me to, and your younger, where can it take you to? So, for me, why do I keep doing it? Because I want to see our students succeed, to see how far they can go, especially our Māori students. (Hurae)

Kimo moves the discussion on to consider strategies:

IT needs to be encouraged at home, it needs to be encouraged on the marae, and those types of discussions. Those types of discussions need to occur to some rangatahi, saying "hey here's the direction we think will be beneficial for us". We had no problem back in the day sending young fullas off to the navy and the armed forces, so obviously it would be good to have that type of drive but this time towards the IT industry. . . .

Whenever I see a Māori student struggling, I feel it's my job to open an opportunity for them, and I see IT as a way, and I do what I can to get them to reach their potential. An example is I had a high achieving Māori student, had A's in his grades and got the top project. I pushed him past his potential, and he loved my course. That's when I saw the creative side come out. I said you're the total package, and because you're Māori – that makes you elite. He's employed and makes more than me. I saw an opportunity to change his life. So, I keep thinking, how can I get Māori into these elite categories because I know Māori will come knocking on his door because of his elite skills. My passion is to find those elite Māori students and push them beyond their limits, so that they can exceed into that elite area. I am more about creating that specialist Māori student than the vocational one. (Hira)

We see that the rangatahi (youth) are a focus of motivation for all kaitiaki, and I propose this is because of the kaitiaki's own positive or negative experiences during their IT journey. As experienced kaitiaki, they know all too well the barriers and challenges Māori will encounter in this industry, and by imparting some of their knowledge, will help rangatahi avoid pitfalls to go on and become successful in the industry.

These kaitiaki also acknowledge aspects of the IT sector that motivate Māori to participate. They highlight that Māori are attracted to IT for various reasons. These reasons include the dynamic culture of IT environments, and how IT nurtures the innovative and creative passion for technology. Hika, Hira, Karaka (generation X) and Piki (generation Z) describe their motivational aspects. Piki is included in this theme because of his strong views towards the attractive nature of IT. His narratives contribute greatly to this study's research questions. As Hika says:

"I like it because it's a real dynamic industry and constantly changing. If you can't handle change you wouldn't be in this industry to begin with. And if you go out of this industry for a year or two bro you don't know nothing aye, it just moves so quickly, that's what I like about it."

Hira comes for a different creativity perspective:

I think Māori are very creative, and this is what drew me to IT. We love to think, design and create things. It's part of our art and culture, we're always creative. When I got into the IT space, I saw that I could develop stuff, and I could create stuff through developing software, and that's what drew me to it.

Karaka is excited by the different pathways the industry opens up:

So that's one of the motivating things to me in this industry, you've got all these different avenues to go down like web development or infrastructure, you can go down pretty much anything, it's a wide bowl. If you've got some core skills, IT opens up your options...the way I see IT is that it's a huge bowl of avenues you can go down, so if you're sick of this, have a look at this (other thing), and if you're sick of that have a look at this (refers to many options) and you can find something that might tickle your fancy you know.

For Piki it's about change:

The biggest thing for me, and probably true of other Māori is, every day is different when you're working in the IT industry... I want to wake up and go to work every day instead of waking up and not wanting to go to work or have to go to work. There's just so much scope to change. I think a lot of Māori, once they recognise that opportunity, will take hold of that.

Every day is a new challenge and that's why I like projects. Projects have a defined end date and then you're onto a new challenge, that's my nature anyway.

I had expected the kaitiaki data to show their enthusiasm for technology and its environment. The dynamic and innovative nature is what attracted me to the industry too. I was excited by this new world where I can be creative and develop something new and interesting. Hira, Hohepa, and Terewai show another side of the attractiveness aspect to IT. Rather than just a dynamic environment, they talk about the allure of new technology that motivates youth (especially) towards IT. Hira strikes a different note:

> There's still the stigma with IT. Even though IT is attractive it's viewed as too damn hard. Because we like to be comforted, let's go do something comforting - and everyone else is doing IT. The reason why Māori is doing IT now is because IT is everywhere now and seems to be the "in" thing.

Hohepa echoes that in different language: "the encouragement for other Māori is the 'glitz' of it (IT), it looks good and neat", and is confirmed by Terewai: "I think for IT in general, now that I've met a number of rangatahi who are interested in IT, there is this glamour attached to the web development side of things, apps and web stuff".

From a generational perspective, the rangatahi focussed upon are either of generation Y "millennials" (born 1981 – 1995) or generation Z (born 1995 - 2015). While both generations are more confident with technology than the previous generations, it is generation Z that requires focussed attention for change. It is those rangatahi who are just embarking on the IT journey that benefit from the experiences of the generation X and Baby Boomers. Generation X are usually the parents of generation Z and so imparting knowledge is motivated from a parental perspective as well as a cultural one. For (Francis & Hoefel, 2018), generation Z are true digital natives brought up where digital technologies is the 'norm' in their daily life. Nevertheless, while they are technically savvy already, the IT industry is still typically governed by the Baby Boomers and generation X'ers. Which is why narratives from these digital kaitiaki are so important.

Finally, a key motivational indicator for these digital kaitiaki is employment. Those from the Baby Boomer generation concentrated on getting jobs that were sustainable, long-

term and provided financial security for their families. Hohepa describes how IT wasn't looked upon as a career but a job in which they could advance:

> The other thing that motivated me was that if I was getting into this space, everything that I was going to learn was going to be relevant to where I was going. I used to be motivated by the fact that everything that I'm about to learn, is it going to be relevant and pertinent to my lifelong career in this industry? So, I made sure I found the right information, got the right detail, could add value to that detail and bring about consequences for whatever industry I was in (IT and Telco) that I knew that I was going to do a good job of it.

In Terewai's case, he didn't even plan for a job in IT.

> "It was accidental, at College we did a whole set of punch cards probably in my 6th or 7th form but that was the only exposure to IT at that College, it only happened once. Literally I just fell into it, I had no aspirations to get into IT. Actually, I didn't know what it was, just that they need a computer operator, so I thought oh well I 'll apply for that, I need a job, so that's what happened. When I left 7th form I had no idea what I wanted to do. I thought I should go to university, but I didn't know my strengths or sought help, I just thought I should go there, but that's how I got into IT".

Whereas those from generation X focussed on jobs that had added value. For example, having higher pay opportunities and aligning with personal interests. They had different motivators. In Hira's observations:

> Everyone has a means to an end. With Māori there's a reason why they do it - personally related. I've got one student (woman) who realises that the job she has now is not going to survive. She is more manual type and realised the world is changing and all the manual jobs have diminished because of outsourcing. Generally, a lot of our Māori were manual workers, they now have to uplift themselves and find a new career, and IT seems to be the boom area, that's why they come to IT".

Kimo was interested by the renumeration:

> I used to work at the TAB as a part-time job while I was at varsity. I remember sitting at the table at work and reading the New Zealand Herald and I saw "architect"', you know, a hundred or something grand ($100K salary) and then I knew I wanted to be an architect, that's where I wanted to be.

Piki was similarly interested in the financial side:

> It's an industry that pays well, and there's opportunity there. Like I look at university students that come out with a commerce degree these days. Everyone is fighting for the same jobs, whereas those who have completed an IT degree or certificate they have got options at the end of their course, more so than other domains.

For Karaka too, although it wasn't about money, neither was it about any career plan:

> I always imagined I was going to be labouring, nothing from school kind of fit me. To be honest I stumbled into IT. IT back then was just emerging as a common thing in the home, they didn't have courses then. All I wanted to do is fix computers.

These digital kaitiaki identified a number of motivating influences for Māori to enter the IT industry. Be it for job security or career aspirations, personal interest or leaving a legacy for the next generation, all kaitiaki recognise that IT provides opportunities for themselves and sometimes beyond themselves as individuals. To focus on the digital kaitiaki and what they can represent to aspiring digital kaitiaki, the next section shows the impact of role models and contexts that inspired them to take up technology as a career pathway.

Theme D: Role Models

Generation X

Roles models for generation X come from whānau or other Māori around them. Within Māori society, whānau members are the first role models observed and so it's not

surprising that whānau and extended whānau are noted as role models. Almost all of the digital kaitiaki refer to one whānau member who has been a role model for them, influencing their behaviour or inspiring them towards the technology field. However, Piki describes role models who are part of his wider whānau network, and who continue to guide him through his IT career today. After highlighting the lack of Māori female role models, Hika shares his desire for more role models for his daughter:

> More Māori and more female Māori in the IT industry is needed. I've got a daughter who's 12 and off to high school next year. I want her to see other Māori females and see that she can do that too.

Piki identifies how he has a responsibility to mentor as he himself was mentored:

> In order for more Māori to take up the IT pathway I think it's critical, for me, I've had a tuakana/teina (older person to younger person) relationship with some key people that I look up to. One is (unnamed for anonymity) who's been my tuakana over the last nine years, every two or three years we set out a plan and see it through and I check in with him at milestones, if I'm struggling with something, I just give him a call.

These two examples widen the role model discussion by referring to two specific audiences other than restricting to only whānau members. The tuakana/teina support model (White, Oxenham, Tahana, Williams, & Matthews, 2009) has been proposed in many sectors when attempting to improve Māori success rates in those sectors. This is a significant model proposition to be considered in the target interventions, described in later chapters.

Baby Boomers generation

This generation talks more of whānau members or whānau structures that were role models to them. Hohepa mentions his father being a role model for him, teaching him that education will help him go far. For Terewai and Hurae, the whānau religious structure – church, was a significant role model for them. The church leaders and whānau members imparted values of good work ethics and working to a high standard, which these kaitiaki uphold to this day. Similar to generation X, these kaitiaki give a

new view to where role models come from. Since these narratives are centred more around the whānau structure, I do think these are signals of the culture of upbringing from their generation.

> A lot of my whānau ended up at church college, and it was at college where my horizons were lifted. I didn't realise that until 10 years ago when I started looking back at how somewhere along the line, decisions were made that I wasn't a party to. I don't remember my whānau asking me 'do you want to go to church college?' it was 'you're going', this is where you're going. And when I was at college it was never 'are you going back next year?' it was 'you're going back next year', and I thought I was going to finish at 5th form, but someone decided 'no you're not you're going to 6th form, and then it was 7th form'. I don't know where all that discussion or kōrero or decisions came from. (Terewai)

> A lot of stuff I've learnt from the (church) administration and leadership side has helped shaped me towards what I do today in my role. What I've learnt in my church callings has helped me to be here now. . . . I do respect our Māori culture and respect also my religious beliefs. My culture has also shaped who I am, to use what I know to where I am in the management position I'm in at the moment. The whānau also helps. (Hurae)

As expected, these kaitiaki show the strong influence of culture, and the members within it as their first role model examples. They do express ideas for consideration such as more female role models and culturally aligned support models. What I also expected, and the data confirms, is that there were very few Māori IT role models, for these digital kaitiaki. This alone indicates an urgent need for interventions to find these role models and assist them to become more visible to potential digital kaitiaki.

This chapter has highlighted an initial set of themes based on data collected from various digital kaitiaki. Digital kaitiaki narratives were captured in interviews and group discussion and then thematised according to numerical and value judgements. Digital kaitiaki from the same generation showed similar narratives and perspectives (influenced by similar upbringing), and so the initial themes were identified using this method too. The key themes emerging from the data consist of Māori identity,

responsibility, motivation and role models. While most of the data supported my expectations, there were some unexpected findings that raised concepts to be considered for the development of targeted interventions, relevant to the research questions of this study. The identified key themes and learned concepts will be further scrutinised in the next chapter.

CHAPTER FIVE: EXAMINING THE CATCH

Wāhanga Tuarima: Mahi Tātari

Having identified key themes and additional components in the data collection and findings chapter, this chapter turns to analysis with a view to making informed recommendations. The first section will seek to both validate and challenge these research components in correlation to this study's research questions. The second section will provide preliminary recommendations and a discussion of a guiding framework to develop target interventions. These interventions will support the key drivers for increasing Māori participation in IT, as well as minimising the barriers that impede these drivers. The section below will address the key themes and components to be analysed in detail.

Through the data collection processes (e.g., interviewing and focus group conversations), coupled with thematising of the data results, the thesis identified the following four key themes that are relevant to this research: A) Māori Identity and Culture; B) Responsibilities; C) Motivation; and D) Role Models. In addition, the research highlights specific components of each theme (e.g., organisational culture, Māori-centric support models, and specific audiences) for attention. These components are addressed further under their appropriate theme in the following sections.

Theme A: Māori identity and culture

Chapter 4 outlined the following four key components as most relevant to this theme: organisational culture (Māori and non-Māori); identity, values and diversity; and the Treaty of Waitangi. This section will consider these components with the aim of distinguishing supportive influences for increasing the numbers, or improving the prospects, of digital kaitiaki in the IT sector.

Organisational culture – Māori and Non-Māori organisations

There has been much research and a large body of literature devoted to the subject of organisational culture since at least the 1950s (Jaques, 1951) with fresh waves of theory for the rest of the 20th century with work by Charles Handy (1976; 1985; 1996)

alone covering three decades and Edgar Schein's first edition of *Organisational Culture and Leadership* (1991) had reached a fifth edition in 15 years (Schein & Schein, 2016). Other scholarly coverage encompasses dimensions of culture (Hofstede, 2001, 2010), tools for measuring culture within businesses (Cameron, 2011; Ghosh & Srivastava, 2014; O'Reilly, Chatman, & Caldwell, 1991), to the impact of culture on organisational performance, productivity and success (Denison & Mishra, 1995; Kassem, Ajmal, Gunasekaran, & Helo, 2019; Sackmann, 2011; Wahyuningsih, Sudiro, Troena, & Irawanto, 2019). One recent cluster of considerations focus on culture and its impact on an organisations performance and its employees (Brougham & Haar, 2013; Denison, Nieminen, & Kotrba, 2014; Tan, 2019; Triguero-Sánchez, Peña-Vinces, & Guillen, 2018)

Within that cluster, topical studies (Chung, Hsu, Tsai, Huang, & Tsai, 2012; Kaasa & Vadi, 2010; Schein & Schein, 2016) have focussed on understanding how to create an innovation culture in businesses. Since this research aims to create positive change for Māori in the IT industry, and innovation is key for any IT organisation (Fransman, 2018; March-Chorda & Moser, 2008; The Royal Academy of Engineering, 2012), this section analyses organisational culture from the two most relevant perspectives – Māori and IT organisations. It will compare and contrast the values, beliefs and practices of organisations in each perspective, with the aim of highlighting opportunities for collaborative and inclusive activity in line with the overall objective of increasing Māori participation in IT and creating foundations for the development of digital kaitiaki.

<u>Māori organisations</u>

H. M. Mead (2003b), Spiller, Pio, Erakovic, and Henare (2011b) and Te Huia (2015) state that at the core of Māori identity are the cultural values such as manaaki (respect), aroha (empathy), kōtahitanga (fostering unity), kaitiakitanga (stewardship of resources), mātauranga (understanding and seeking knowledge), tika (proper behaviour), and whakapapa (genealogy, relational, interconnected view of all creation). Similarly, with other organisational values instilled within a company and its employees, the adoption of Māori values will influence, and ideally, guide decision-making, perspectives and interpersonal behaviours of an organisation also. However,

currently there is a shortage of literature about Māori values within a New Zealand organisation context (Kuntz et al., 2014, p. 104).

In the absence of substantial literature on this specific topic, I undertook my own research into the values, beliefs and practice systems of Māori organisations in New Zealand. To focus this, while keeping it manageable, I scanned the strategic vision and mission statements in a number of prominent Māori organisations in tribal and commercial fields. The organisations were chosen based on their large tribal membership size and commercial rankings (e.g., sizeable financial portfolios), and came from such diverse industries as education, fishing, agriculture, energy, and iwi/tribal entities. The research found the following eight common Māori cultural values that align with those found in the literature:

- *Manaakitanga* – the caring for others, demonstrates hospitality
- *Whanaungatanga* – relationships and connection, kinship, sense of family connection
- *Kaitiakitanga* – guardianship, stewardship, trusteeship
- *Rangatiratanga* – chieftainship, sense of autonomy, leadership of a group
- *Kōtahitanga* – unity, collective action
- *Whakapapa* – genealogy, tribal connections through lineage
- *Tikanga* – correct procedures, customary system of values and practices
- *Whakapono* – belief, trust, faith, being true

It was reassuring – in that it provided partial confirmation of the implicit hypothesis of Māori organisations linking to Māori values – to find such consistent measures of consensus. Strikingly, the first five of these values were the most common amongst all ten of the Māori organisations researched. To an extent, the remaining three surfaced as well, but not with the same clarity because similar values were represented by different terms. For example, the word "integrity" used by some organisations, can also be inferred to by the Māori word "pono" or "whakapono".

Māori organisations recognise the value of cultural identity at strategic and tactical levels of the business, and more recently, theorists in the traditional western organisational literature have begun to realise that value also, and now look at how these cultural values can help their businesses (Haar & Delaney, 2009; Harmsworth,

2002; Warriner, 2007). The inclusion of cultural identity at these various levels give rise to the notion that these organisations also recognise the "cultural capital" they have, and how it can be economically and socially beneficial for the business (e.g., by attracting desired customers and employees who hold similar value systems (P. Best, 2010; London & Chen, 2007; Throsby, 1999). This shows that indigenous values systems can have a place within western business models and actually provide positive impact to those businesses and the sectors in which they operate.

This matters since Māori organisations that inherently support Māori values, and have some form of IT organisation within them (e.g., IT departments or expertise to support the business) are a prime site for encouraging, employing and promoting Māori. They hold unrealised potential and are well situated to encourage existing digital kaitiaki, and to create an environment where more digital kaitiaki can emerge in the future. I would go further to state that these organisations align with (the majority of) their employees' cultural values and provide opportunities to grow in IT-related areas, by way of a "sandbox" type of environment. They have the knowledge, values, and resources to provide a safe working environment for existing and potential digital kaitiaki. They can support Māori who are just starting out in IT, as well as allowing them to learn through success and failure.

A "fail fast fail often" approach is well-known in the IT industry and is a methodology used in software development. It has also become a mantra of technology start-ups and entrepreneurs as a way of learning quickly from mistakes and adapting new solutions from them (Draper, 2017). Indeed, advice from entrepreneurs – both Māori and non-Māori – is to fail fast and fail often (MacCready, 2018; O'Leary, 2016). Nevertheless, in a nation where statistics show Māori to be structurally disadvantaged – including the key arenas of education and IT, the provision of a safer cultural environment nurtures potential kaitiaki rather than expect them to fit into a Western IT organisation that many of the interviewees found to be inhospitable in ways that are culturally harsh and possibly deter many from continuing. From this perspective, I remember all too well how I was the only Māori in my IT training to complete.

<u>Non-Māori organisational culture</u>

Yet, it is not enough to leave it to Māori organisations to provide these safe and nourishing spaces. For New Zealand companies, there are incentives to establish a culturally inclusive workplace environment. This is not only to respect the partnership within the context of the Treaty of Waitangi, but also to benefit from the additional indigenous worldview that can positively contribute to an organisation and enrich its diversity and, hence, its creativity and innovation (Bordas, 2012). Since Māori are the key partners in the treaty of Waitangi and make up part of the customer base that most (if not all) New Zealand companies engage with, it seems good business that Māori should be considered in a company's marketing and targeted audience. In adapting to a more inclusive reflection of the diverse audience populations as a whole, organisations would go towards attracting more customers. Haar and Brougham (2013) suggest that Māori may respond positively to organisations that acknowledge and respect their values and this could go towards building a connection with that customer base.

The New Zealand IT industry is an innovative, young, and predominantly non-Māori industry. The key focus for these organisations is the selling of IT-related products and services to achieve profit objectives. They have vision and mission statements and adopt new and progressive ways to improve productivity through leadership and management initiatives, which in turn aim to increase profitability for their organisation. As a new approach to increasing their market share in New Zealand, companies have begun to recognise the potential of embracing indigenous culture, to better attract an untapped customer base with similar value systems. In particular, they see the benefit of Māori culture and values as part of the brand and marketing of their company.

As a substantial starting point for IT, the first study looks at a quintessential national company, Air New Zealand, which is the fourth largest employer in New Zealand and the largest in the tourism industry. While this company is in the tourism industry, it is included in this study because it has consistently ranked in the top 50 New Zealand organisations for IT innovation and leadership for the last five years. Due to its complex logistics and wide range of national and international coverage, it depends heavily on technology to keep it ahead of its competitors and so has a large internal IT organisation.

Rigby, Mueller, and Baker (2011) note that Air New Zealand went through a major organisational change that involved incorporating Māori culture and values to improve their customer credibility, trust, and increase their marketplace position. Their study highlights how the understanding and adoption of the Māori values provided a "unique point of difference" (p. 116), and enhanced the company's' working environment for employees, interestingly they found this for both national and international staff. Studies show that this type of innovative leadership helps change the culture with employees, and aids in delivering its products and services in ways that can help in exceeding customer demand, and maintaining a sustainable business model (Villaluz, 2019).

Rigby et al. (2011) also outlined the challenges when implementing Māori cultural values in which all (non-Māori) organisations should take note of. However, for this research thesis, this study emphasises the positive impact of an indigenous culture within a non-indigenous organisation, and highlights points of note for the future development of interventions. Some of these points include the use of Te Reo Māori (the Māori language), and Māori cultural images.

As part of their organisational change, Air New Zealand decided to adopt Te Reo Māori and Māori images throughout their marketing and customer-facing environments. Examples like the use of the "'koru'" symbol, a unique Māori pattern but recognisable by most New Zealander's, and the greeting of customers in Te Reo Māori (e.g., using "Kia Ora" for Hello). Their concerted effort to display Te Reo Māori in spoken or written form reinforces the value of Māori culture for employees. At the same time, it posits an understanding of their place within a New Zealand context (e.g., personal identity and partially shared cultural icons), and how they can better connect with their customers. In terms of developing emerging digital kaitiaki, this approach encourages those with limited competency and/or awareness, to learn more for themselves – especially as it is visible as part of the corporate reputation, and to connect closer to their Māori identity. The next section will discuss the role of identity and values for organisations and diversity within the workplace.

Te Huia (2015) suggests that because Māori experience discrimination rates higher than other ethnic groups, it could account for why some Māori choose not to identify as Māori. Each of the participants of this study indicated their level of awareness of their Māori identity, and some stated how the possibility of being discriminated against, in a non-Māori working environment, influenced them to put their "Māori-side" on hold. Others mentioned they were not as competent in their identity as they would like to be but wanted to increase this in personal and professional contexts. All expressed their preference to work in an IT environment that embraced their cultural values and/or work where they could make a positive contribution to Māori communities.

The findings from the interviews suggest how (Māori) values-based organisations support digital kaitiaki to perform better in the workplace. Moreover, the natural alignment with Māori identity can act as encouragement to those kaitiaki to operate at a different level and with a greater sense of investment in their work because of the intimate connection through values (Bunten, 2010). Other New Zealand organisations are following Air New Zealand and Māori organisations in similarly recognising the worth of values and many have started to incorporate these into their mission and vision statements. Indeed, as J. P. Mika and O'Sullivan (2014) observe, it isn't just Māori organisations who "are increasingly explicitly adopting Māori values and customs as ethical principles for the conduct of boards of directors, management and employees, and in the design and delivery of health, education and business services" (p. 14).

In this internet age, the first encounters with an organisation's values are often through the values statements (vision, mission, strategy) that typically appear on their website as well as on company documents. Values-based organisation seek to support these with role modelling during interaction with its leaders, management or general staff. Ideally, the values of an organisation must clearly be reflected in the value statements and matching behaviours (Allison, 2019). These are ways for typically capitalist-driven organisations to extend their customer reach to values-based audiences. While, capitalist values have normally not been congruent with indigenous worldviews (Jalata, 2011), these values are shifting in many firms, and, accordingly, the view of capitalism is evolving amongst some indigenous groups. The shift could be crudely

characterised as a move from generating negative effects for society to maximise profits, to seeking positive social impact, while sustaining good financial returns.

This can be found in Härtel (2015) introduction of the term "indigenous capitalism" to describe a positive viewpoint of capitalism for indigenous groups. For Hartel (2015), indigenous corporations embed "indigenous values, law, culture, and community accountability into the corporate mission and business culture of the organisation." (p. 786). Others (Spiller, Pio, Erakovic, & Henare, 2011a; Spiller et al., 2011b) argue that indigenous capitalism prioritises relationships with people and the environment, emphasising stewardship and sustainability rather than economic growth.

As well as the changes in the ethos of capitalism, there is an economic shift. New Zealand economists and business analysts have started to recognise the significance of the Māori economy, reportedly worth $50 billion dollars to the economy (Chapman Tripp, 2017). Much of this economy consists of small to medium Māori enterprises (SME's) that work under the radar compared to other businesses (Amoamo, Ruwhiu, & Carter, 2018). Amoamo et al. (2018) go further in claiming that these Māori SME's are redefining the "dominant Western narrative surrounding notions of economy" (Gibson-Graham, 2006, 2008, as cited in Amoamo et al., 2018, p. 75). Also, since these SME's are underpinned by strong cultural values and beliefs, this new economy should not be ignored, but researched and understood in greater detail.

Just as the significance of the Māori economy took time to emerge, I would venture that there is a smaller, but important Māori IT professional (digital kaitiaki) network of small to medium organisations, working unnoticed by the mainstream IT industry. In the interviews, the participants of this study go some way to validate the existence of such a relatively unseen digital kaitiaki ecosystem. Just as the Māori economy opens up more prospects for IT in general, Māori IT employment in particular, this ecosystem can provide opportunities for the Māori economy and non-Māori businesses alike. Apart from providing a pipeline of skilled IT personnel, they also contribute to the building of a diverse workforce within organisations and within the nation.

Parshakov, Coates, and Zavertiaeva (2018) review how diversity in the workplace has been touted as both good and bad, depending on what approach is taken. Many

organisations have had good intentions to increase the diversity of their workplace, but underestimate the complexities of doing so, and at times are unprepared for the unexpected outcomes (Otten & Jansen, 2015). When talking with the participants of this study, most stated that having more diverse workplaces, in particular, ones with more Māori, would be preferred. In New Zealand, because of the Treaty of Waitangi (see next section), the nominal but legislated commitment to bi-culturalism, and the inequities in such major areas as education, health and incarceration, there is a case for prioritising positive discrimination for Māori. For now, while businesses seem to favour greater diversity, this research focusses on more Māori first and foremost. By creating more space for Māori, it seems likely that this could open up space for other ethnicities in the future (Ministry of Business Innovation & Employment, 2018). The next section discusses the partnership non-Māori should have with Māori, and the impact of this on Māori, IT and business.

Treaty of Waitangi – Partnership

Although it has been, and continues to be, a point of contention, New Zealand's founding document is the 1840 Treaty of Waitangi. The causes of dispute result from a multitude of reasons, nevertheless, a substantial literature supports the view that the core of the contemporary Treaty disputes is because of injustices and inequalities perpetuated by the British Crown and the European settlers on Māori.

Fast forward to today's context, race relations in New Zealand is continually being challenged. While there is the Treaty of Waitangi and mention of true partnership to be honoured, there are parts of New Zealand society that perceives the way forward as different. In a country where Māori culture (via language and people) are promoted within sporting events (e.g., haka), music industries (e.g., Māori artists and albums), and even mainstream media (e.g., Orini Kaipara first with moko kaue to read major news bulletin (Brookes, 2019)), there are bastions of society where non-Māori are the dominant culture, and continue to lead or influence decision-making in technology-related fields.

This very brief history of race relations in New Zealand is here because the issues still spill over into the present and IT is not immune. One such example of non-Māori controlling technology-related decisions that should include Māori, was the sale of 3G

(3rd generation) and 4G (4th generation) spectra (radio frequencies). A group of Māori led a Waitangi treaty claim against the sale of 3G in 1999, and again for the 4G spectrum in 2009 (Pullar-Strecker, 2009; P. Walker, 2019). These technologies would enable Māori to position themselves fairly within the technology sector using resources that were part of the rights and ownership encompassed by the treaty (whether they were known at the time of treaty signing or not). In brief, the Māori claimants were objecting to the government of the day auctioning off the frequencies without Māori having a first right to them under the articles within the Treaty of Waitangi. This auction disadvantaged Māori by preventing them from accessing technology and the associated opportunities and denied them their sovereign right to resources as per the treaty. Studies (Ezhilarasan & Dinakaran, 2017; Penttinen, 2019) agree that the 3G, 4G and more recently 5G spectrum, are critical for mobile and digital technologies (e.g., telecommunications, digital media – radio & television, and internet of things).

Preliminary recommendations

This section outlines preliminary recommendations informed by the analysis above to increase the development of digital kaitiaki.

1. Create environments where Māori identity and values are nurtured as a way to increase engagement, collaboration and ultimately positively influence the IT area. An example of one trialled is a Māori leadership programme called 'Tahuna Te Ahi', which won the Deloitte top 200 diversity and inclusion leadership award in 2018. This programme "connects people to indigenous values and culture while at the same time giving them the tools to incorporate their culture into a business environment." (SKYCITY Entertainment Group, 2018). This recommendation would expand on this leadership programme and choose specific IT companies that contribute to Māori communities either locally, regionally or nationally.

2. The promotion and support of Te Reo Māori initiatives in digital development environments. For example: connecting language experts with digital developers to create products and services that promote the language. While some of this work is being done at various levels, this recommendation could provide a model of engagement between language and digital kaitiaki, where products could quickly enter the market. Supporting this is Taiaroa and Smith (2017, p. 25) who state that

"culture is expressed in the use of the language and should be encouraged in all environments".

3. Research into Māori groups with digital initiatives that will positively impact their group or whānau. These don't have to be large projects, but small iterative projects that build on each previous successful outcome. Ratima, Brown, Garrett, and Wikaire 2007, as cited in Pihama, Lee-Morgan, Smith, Tiakiwai, and Seed-Pihama (2019, p. 58) state that "group and whānau-based models provide collective approaches for Māori success."

4. Support internship or cadetship work for Māori in digital environments. These will be with IT organisations that are supportive of Māori cultural values and excel in digital technology developments. Cadetships are known for success and they could be for Māori too (Te Puni Kokiri, 2011, 2019).

Theme B: Responsibilities

Chapter 4 highlighted multiple types of responsibility experienced by the research participants. These were very personal to each participant and all felt that they have an individual responsibility to create a better future for others. Firstly, all noted their responsibility to their immediate and extended whānau, in particular, to their parents, children and influential people in their upbringing (e.g., uncles, aunts, grandparents). They also remarked on making an intergenerational impact for whānau and the wider Māori community. Secondly, these digital kaitiaki noted the importance placed on non-Māori having a responsibility to support Māori in IT. Lastly, they spoke of protection and safety within technology-specific areas as intellectual property rights and Māori data sovereignty. The following sections will elaborate on each of the three types of responsibilities mentioned.

Whānau and intergenerational impact

Māori culture is a collective and family-oriented culture. The raising of children is done not just by the parents, but also people who are related by blood, related by family relationships, or by tribal affiliations. These people are commonly referred to as uncles, aunties and cousins no matter what relationship they have with the person. Every participant of this study expressed their responsibility to their whānau (immediate

family) and whānau whānui (extended family), and that their work must be for the betterment of the whānau to ensure any sacrifices made to get the participant to where they are now, was not made in vain. The benefits must be for the person individually and if possible, to their whānau collectively.

In traditional Māori whānau structures, the grandparents were the main guiding influences of the whānau and are referred to as kaumātua, kuia, koroheke, or rūruhi (Edwards, 2007). The participants state the importance of becoming successful in whatever they do, but they portrayed a greater sense of responsibility to the kaumatua and parents to be successful in an area not commonly known for Māori to follow, or be visibly successful in. The kaumatua generation were familiar with Māori occupying the primary industries sector, typically physical or manual type work, and were uncertain of the field of IT. This uncertainty placing more pressure on participants, as it plays on their common Māori values of whakapapa and kaitiakitanga. Participants understand that these values apply to both older and future generations and their actions go beyond providing financial support, but protection of whānau reputation and developing intergenerational opportunities to enable success for their children, grandchildren and so on (Beall & Brocklesby, 2017).

The intergenerational responsibility was noted by participants towards their whānau members and other Māori (non-related). The value of kaitiakitanga goes beyond the whānau boundaries and extends to the wider Māori population. There is a valid perception that if they support other Māori, in turn this will help all Māori eventually. This help is perceived either as direct support - e.g. the person they help may help one of their whānau in the future, or indirect support - e.g. the person they help may influence other areas of the sector that will benefit the participants whānau members from the next generation. This is the holistic Māori worldview where all things are interconnected (G Smith, 1997; L. Smith, 2012b). Following on from this interconnectedness is the responsibility organisations have towards Māori and the IT industry.

Support from others – Māori and non-Māori
The findings show that responsibility is required from Māori to better support other Māori in IT industry. Māori organisations and individuals all play a role in the nurturing

of potential digital kaitiaki, and because all are inherently influenced by Māori values. One digital kaitiaki observed during this research, Herewini, made a significant statement about support from Māori.

> We as Māori need to support our own more, too many times Māori hire non-Māori and whether it's due to mistrust or not enough information, it is hard for those Māori to create a space if they are not supported by their own communities.

Herewini's comment is a sentiment felt by the majority of the digital kaitiaki in this study. Many of which work as consultants, contractors or for small to medium businesses. With the advent of large post treaty settlements, Māori communities and treaty beneficiaries look to technology to advance their capacity and capability challenges, for managing the settlement monies. Unfortunately, many turn to non-Māori, more established IT companies, than their own Māori-owned businesses. Whether this is due to risk adversity or lack of understanding and confidence in Māori IT professionals, the impact is counter-productive to promoting Māori in the IT industry This responsibility challenge lies with Māori society rather than non-Māori and is up to Māori to find solutions. One such solution is promoting the expertise of Māori and making them more visible to the Māori community. What is visible are numerous non-Māori businesses in IT and I believe they too should bear responsibility to improve the IT industry by embracing Māori IT professional skills and expertise.

This research has discovered that some non-Māori organisations promote Māori technology activities either within their organisation or within the sector (OMGTech, 2018). These organisations acknowledge the value of a more diverse customer base in which Māori contribute to. Technology associations such as NZ Tech, NZ Hi-Tech Awards, TechWeek NZ and KPMG are examples of IT domains that promote Māori IT businesses and/or professionals (KPMG, 2017; New Zealand Hi-Tech Trust, 2019; New Zealand Technology Industry Association Inc, 2019; NZTech, 2019). While this is not the primary responsibility of these associations, it can be noted that the proposal of such promotions is instigated by Māori within those associations, and then championed by non-Māori decision-makers.

In recent years, Callaghan Innovation (an innovation, research and development agency) sponsor a Māori category in the New Zealand Hi-Tech awards (Callaghan Innovation, 2019). They recognise the contribution Māori bring to the IT industry by creating an independent Māori award category. Māori IT businesses can still enter other categories but having its own category provides a greater chance of visibility to a national and global IT audience. The New Zealand Hi-Tech awards is an annual event where technology aligned organisations sponsor an award category, and the entries have an opportunity to network and market their products and services. It is more than a showcase but a high-end awards evening where technology businesses can expand their networks and connect with potential funders and customers. Entries are assessed by internationally renowned judges and so the exposure to expertise is significant, especially for start-up companies.

The New Zealand government also recognises its responsibility to support Māori economic development across the country. In 2012, they published a strategy and action plan document *Strategy to 2040: He kai kei aku ringa. The Crown-Māori economic growth partnership* outlining a framework to guide government activities to achieving positive economic outcomes for Māori (Ministry of Business Innovation & Employment, 2012). Since then, subsequent documents and programmes have been initiated to foster Māori success across key industries. Many of these give focus to the IT industry with action plans for national and regional audiences.

At a regional level, the Minister for Māori Development – Nanaia Mahuta, launched, the Waikato Region Māori Economic Development Action Plan and Agenda in 2018. This plan presents a range of economic activities for 3 years, and a long-term agenda with a 10-year vision. These activities are underpinned by a Māori-centric framework called *Te Whare Ohaoha* and details three key pillars called Te Poukaiāwha – Māori collectives, Te Poutokomanawa: Whānau enterprise; and Te Poutūārongo: Rangatahi (Waikato Region Māori Economic Development, 2019). These pillars align with the themes of this research, for example: focussed attention on collective responsibility, representation of rangatahi voice and action, and the role of whānau (and extended whānau) supporting each other. Furthermore, this plan proposes specific action items that include creating support mechanisms for Māori business and the technology sector.

While support plans aim to help Māori business in the technology sector, a few of the participants in this study highlight additional areas of concern where digital kaitiaki should focus, lead and be responsible for the well-being of others. Two IT-specific areas are intellectual property and data sovereignty, in particular, Māori data sovereignty. Anaru outlined that intellectual property can be a shared responsibility as a way of protecting all parties involved. His example is a collective approach which enables Māori to have greater say over how and what happens to information important to them. With a collective approach, they benefit from shared expertise and supporting each other where there are skill gaps. The second area of responsibility for digital kaitiaki, and has seen significant growth in recent years, is Māori data sovereignty.

Māori data sovereignty follows on from the United Nations Declaration of the Rights of Indigenous Peoples (UNDRIP) discussions about indigenous data sovereignty (Kukutai & Taylor, 2016). Māori data sovereignty has become more visible due to government and private organisations utilising data about Māori, but Māori have no say in how that data is used, or even where that data is kept. For most data gathering, Māori cannot access data about themselves. Digital kaitiaki, Anaru states "the first 10 questions from Māori usually is who owns the data, who holds the data, who sees the data, where is the data". The responsibility of collecting, accessing and reporting on lies with the multiple parties, however, Māori data sovereignty means that Māori have the first and last say about data that represents them. This is a significant change of thinking for the organisations who have typically managed data in a digital form. This requires the coming together of digital kaitiaki and the industry for ways to work together in a responsive and responsible way.

Preliminary recommendations

This section has shown that the responsibility to increase Māori participation in IT goes beyond the individual digital kaitiaki. From the whānau to IT organisations, to government-led and Māori-led initiatives, all with the ability to make a difference in a global and transformational industry. The following are some preliminary recommendations based on the theme of responsibility.

1. Promote a professionally responsible industry that creates positive change for emerging digital kaitiaki. Whether at strategic or operational levels, Māori and non-Māori know that supporting drivers for change benefits all IT communities. Strategic approaches may involve bringing together leaders from the Māori IT space for global discussions underpinned by regional and local successes. Operational approaches may involve regional-based targeted interventions for Māori rangatahi, women, and start-up businesses. This is a more 'hands-on, at the coal-face' approach. These could be in the form of 'wānanga' style forums to encourage people into IT or showcase the benefits of IT for community benefit (e.g., possible employment opportunities).

2. Promote Māori-specific recognition platforms such as awards, scholarships, industry marketing and more, highlighting digital kaitiaki and increasing visibility of the established Māori IT industry Support for emerging digital kaitiaki should be through wider public promotion and acknowledgement of these kaitiaki. Sharing the good skills and expertise of kaitiaki amongst whānau, personal and community networks; promote online via social media platforms where Māori participation rates are increasing significantly, and continue to do so with generation Z (Keegan, Mato, & Ruru, 2015; O'Carroll, 2013a).

3. Research projects that support digital kaitiaki and the contribution they make to the IT and New Zealand economy. These may include research that support funding applications for Māori SME's, or Māori digital projects. With the advances of technology, a popular focus area recently for digital kaitiaki is digital storytelling. Digital storytelling of Māori history and stories have become prevalent in the last few years, where change has been driven by Māori - e.g. iwi-based digital stories (Arataki Systems & Timutimu, 2019; Ngāti Whātua Ōrākei, 2019)

Theme C: Motivation

An important part to answering the research questions of this study was to understand what motivated digital kaitiaki to pursue IT as a career pathway. By understanding this, would give assistance to identifying where this study can provide recommendations for interventions, to promote the positives and address the challenges. The data collected highlights both positive and negative motivators that have led the digital

kaitiaki to where they are now, and where they aim to go in the future. While the majority of motivators were underpinned by negative experiences from their past, it was heartening to see that the future-focussed motivators are supported by a willingness to instigate change. The four motivators relevant to this theme are A) Financial, B) Underrepresentation of Māori, C) Globalisation, and D) Generational impact, and these are described further in the next sections.

Financial motivation

This study acknowledges that Māori is a values-based culture and a core value is whānau (family) (L. Smith, 2012b), and so it was expected that all of the participants would raise finance as a motivator to support their whānau. This motivator is expressed from an individual, collective or systemic perspective. From an individual view, participants noted that IT was an area that had high income potential. As Kimo stated earlier, he was attracted to the high salary of an architect (e.g., $100k), and this was before he started his own family. While the majority of participants were initially motivated by individual benefit, all described a shift from their own benefit to that of their immediate or extended whānau (a collective perspective). Terewai shows this in his statement:

> What motivated me originally was money. To get more [money], more means to build my career, build my skills, and get more work experience. Once my family [wife and children] came along that's another motivation. I knew more things as my career developed and growing as a person, being more aware of things, have an income for my family and that they had pathways.

I believe the drive to provide the best financial opportunities applies to most (if not all) whānau. The technology industry is purported as an industry where people can make a lot of money through innovation and creativity, and so, many are attracted to this value proposition. Media promote how earning money can be easier through technology and making a living can be done from the comfort of your home. This appeals to newer generations as compared to the professions like doctors and lawyers, espoused by previous generations, namely parents and grandparents. This also appeals to collectives such as whānau, hapū, iwi, marae or Māori businesses. These collectives relate the financial potential of IT to a wider context such as research

from their place of identity, or areas of historic relevance. However, the participants of this study, and who are part of collectives named above, raise the negatively influenced motivator of systemic inequality.

Of all the digital kaitiaki interviewed and observed, a large number expressed systemic inequality for Māori when accessing funding for IT-related initiatives. In particular, Pita, Anaru. Atareta, Kiriwai, Rangi and Herewini spoke of their experiences of how difficult it was to successfully apply for funding for Māori IT initiatives. They highlight that Māori are disadvantaged when it comes to applying for funding, because those funding pools are built upon non-Kaupapa Māori frameworks or constructs. In Herewini's words:

> I've been running my [IT] business for over 15 years and I don't trust these new funding schemes for Māori IT. Every time me and my friends apply, we always miss out, and then we hear these Pākehā companies get funded, for IT projects to Māori. What the hell is that about? The system is rigged.

and Pita expresses similar sentiments:

> It sucks bro, we know what our people need. Even when they [government] setup these funding pots to help us, they don't give the contracts to Māori. They already have Pākehā in mind. Their criteria is set up for them [Pākehā], and then they make us jump through their hoops and still give it to Pākehā.

Both Herewini and Pita have been in the IT industry for over 15 years and their frustration at the system has grown in intensity over the last five to ten years. They support the view that systems setup to support Māori, but don't have a Māori-centric worldview in the application and delivery process, are biased against Māori. This particular motivation, while born from negative experiences, motivates these digital kaitiaki to call out for systemic changes where they can, especially those systems that are purporting to help Māori.

Underrepresentation of Māori,
Another key motivator is the underrepresentation of Māori in the IT industry. All of the research participants spoke of wanting to see more Māori in the industry and the

majority signalled that more wāhine Māori and rangatahi were the most important areas for representation. Hika outlined how his daughter is a natural with technology, and he wanted to see more Māori females who could be role models for his daughter during her life journey in IT. Studies into women in IT and wāhine Māori in IT have been growing over the years, yet the levels of representation still remains a challenge.

Meanwhile Pita, Niwa and Hurae mentioned how the technology sector needs to be adaptable to the needs of rangatahi, and rangatahi should have a greater say in decision-making areas. Hurae says.

> My kids look at me and think I'm old technology and how I look at IT. They laugh when I tell them what IT can do for them. They're not interested. They've got their own ideas, and I'm out of touch.

Along similar lines, Pita says: "I was gamer when I was a kid but man, my kids, my kids have a whole different world of gaming, way beyond what I knew. We've got no idea what their world will be like."

These participants highlight that while encouraging rangatahi is good, the industry and Māori need to recognise that rangatahi should have more say in how they engage with technology. That we come from a parent/older generation position and views are somewhat out of date already. Rangatahi experience with technology is not from a learning position, but from an entrepreneurial position. Generation Y and Z are digital natives (Evans, 2017) and so are not burdened by the proliferation of technology, they are more focussed on how technology can create opportunities for them. The opportunity here is for generation X and older who are in decision-making positions, to promote spaces for rangatahi and wāhine Māori to define their pathways in IT, whether they are new or existing.

Globalisation

Many of the participants of this study are entrepreneurs and owners of their own companies. All described how they look at the world as their market and not just their local community or within the geographical boundaries of New Zealand. Technology, and in particular, social media, has provided new ways of looking at marketing

products and services (Consoli, 2017). In addition to this, generation Y and Z have been instrumental in the burgeoning esports and gaming industry which has become a global industry (Sjöblom, Hamari, Jylhä, Macey, & Törhönen, 2019). This technology-based industry has grown into a multi-billion dollar ecosystem (PR Newswire, 2018) and while it is deemed an industry on its own, it provides a potential point of attraction to IT for Māori and rangatahi.

The globalisation of technology presents opportunities and challenges for new and emerging digital kaitiaki. These opportunities include sharing culturally based values through products and services to global customers, and challenges include ensuring the protection of that culture and identity in a global arena. Protecting brand reputation and intellectual property is critical for any company, and more so in a global context. For digital kaitiaki, since the majority of the businesses are small to medium organisations, they have the added challenge of competing against well-established organisations with internal structures that have greater flexibility in pricing, delivery and service. What digital kaitiaki do have as an advantage is their unique indigenous cultural values, that help them connect with customers with similar value systems, and it is these global customers that these kaitiaki should target.

Other digital kaitiaki – specifically Kiriwai, Pita and Rangi – have found greater and more prosperous connections with overseas indigenous groups than the New Zealand market. Initially they started in New Zealand, but through numerous hui and conferences overseas, they built up networks with customers who appreciate the Māori culture and values in their company. In Kiriwai's words:

> We go overseas and the people there can't get enough of us. They just love what we do and always ask us to come back. It's sad when our own country doesn't appreciate us. They just see a small business and treat us like that. Not overseas, so we'll go where we are wanted, and we get paid for it.

Rangi continues in the same vein:

> yep, our only problem is which country to go to next. We can't keep up sometimes. And, they [overseas indigenous] get us you know, they're from

another country but they just get us. We have similar whakapapa and stories, so we are on the same wavelength, it's cool bro.

What these kaitiaki show is the power of globalisation working in their favour, through their values and cultural identity. They are motivated to seek out customers who have similar value systems, want meaningful relationships, and they receive good revenue from those customers.

Generational impact

Another significant motivator for digital kaitiaki is making a positive difference for the next generation. Whether for their own children and family, or for Māori in general, all of the digital kaitiaki have mentioned that the work they do is not just for them, but for the generations of the future. This intergenerational perspective is shown in statements by three different kaitiaki . For Hohepa:

> The motivation is for tomorrow's kids, and the passion/my strengths is to keep them motivated and move forward and take tomorrow in their hands and make it happen, that's my strength and motivation to keep looking at tomorrow for them and helping them to try and get there.

Terewai's statement similarly looks across generations to show how he was influenced by his parents and the generation before him, and states how that has shaped the way he works in IT to this day: "But what was motivating me was doing quality. Anything you committed to, you put everything into it, your full passion because if you don't then sometimes it wasn't worth doing at all, that's what my old man and grandmother told me."

Anahera, in turn. talks about the advantage the next generation has with technology, and how they are now the future leaders in IT because:

> They are born into technology, it's all around them and they teach us how to use it. We need to listen and watch them lead the way. They are the leaders now. My motivation is to share my knowledge of the world, what they'll experience and teach them how to deal with it.

These kaitiaki show a shift from a teaching type role to more of a mentoring role. They recognise that the next generation, as digital natives, already have a head start on them with technology, and that the knowledge is not about the technology itself, but about the world in which they will operate with technology. A knowledge sharing role about world experiences, difficulties they may experience, and opportunities to keep a lookout for, while staying grounded with cultural values.

Preliminary recommendations

This section has shown motivation for digital kaitiaki range from the material and tangible to the socially focussed and intangible. The following are some preliminary recommendations based on the theme of motivation.

1. Establish a social enterprise that helps emerging digital kaitiaki (wāhine Māori and rangatahi Māori) with starting an IT/technology-related business. This may include facilitating finance and marketing workshops for local, national and international markets.
2. Facilitate a series of seminars where experienced digital kaitiaki share knowledge and exchange business opportunities with wāhine Māori and rangatahi. These would provide many networking openings.

Theme D: Role Models

Throughout this thesis, role models have been signalled as an important part of increasing participation rates of Māori in IT. The following sections go into detail of wāhine Māori, rangatahi Māori, leadership and entrepreneur role model types.

Representation of Wāhine Māori (Māori Women)

The New Zealand Technology Industry Association (2015) reported on the lack of women in the IT sector. From statistics gathered in the 2013 New Zealand census, women make up less than 25% of those employed in IT specific jobs, and less than 30% of all roles across the tech sector. They go on to state that "the number of women planning to enter the sector is also declining with only 3% of 15 year old's in New Zealand considering a career in computing professions" (p. 1). Further literature reaffirms similar statistics and concerns about the underrepresentation of women in IT

(BCS Learning & Development Ltd, 2014; Hamilton-Pearce, 2009; Kahn & Ginther, 2017; Ngatuere, Tupu, & Young, 2002, 2004; Young, Rudman, Buettner, & McLean, 2013) . Of the literature accessed to date, all give rise for concern and provide recommendations to change these statistics for the better. While the semi-structured interviews in this research only had one Māori female participant (due to availability), the focus groups and other observations had 32% and 47% female participants respectively. These increased percentages indicate a steady growth of female representation in the digital kaitiaki space, and this has a flow on effect of positive role modelling to young females to take up technology is a pathway of interest.

Technology is part of the four key subjects that literature identify as areas to focus on when addressing female participation rates. Science, technology, engineering and mathematics (STEM) are subjects that have typically been male -dominated and a key recommendation to attracting more females to this is through female role models. Young et al. (2013) and Kahn and Ginther (2017) propose fostering more female role models in STEM for younger females, increases the probability of those young women continuing in the STEM fields. They also state these increased numbers contribute to changing the stereotype that STEM-type areas are for male-dominated cultures only (Kindsiko & Türk, 2017). Undoubtedly this would positively impact on Māori women participation rate in IT. In addition, the dearth of literature about Māori women in IT raises an opportunity to recommend further research into this as a specific subject area.

Representation of Rangatahi Māori (Māori Youth)

Rangatahi Māori, from generation Z, are digital natives and as such are likely to be the most tech-savvy generation of all. However, maintaining their interest in the technology sector is influenced by the presence (or the lack) of Māori role models. Having a person who reflects your identity and culture, in your area of interest is empowering (Karunanayake & Nauta, 2004; Price, 2010). Taiaroa and Smith (2017) further observe that:

> Māori students desired role models with whom they could readily identify, and for this reason they wanted more Māori lecturers. But it was not just because these Māori lecturers would be good role models; the students perceived that

they would be better mentors to them as Māori students. (p. 25)

Rangatahi have little to no say in high-level technology decisions that may affect them because management and governance level decisions are made by people of age and experience, the opposite to rangatahi. However, there is some literature that shows having youth on governance boards can be beneficial to the stakeholder they represent (Grealy, Driscoll, & Hickey-Moody, 2018; Zeldin, McDaniel, Topitzes, & Calvert, 2000). This research supports the promotion of role models – rangatahi or older, to be visible to rangatahi, so as to better reflect and encourage the society in which they represent.

- Māori – Reward and recognition, promote and hire,
- Non-Māori – Recognition and acknowledge, diversity works

Leadership and entrepreneurship

The technology sector produces numerous successful leaders and entrepreneurs, yet successful digital kaitiaki are rarely seen or visible. This is partly due to a cultural position of "not talking about one's self – or boasting", and due to digital kaitiaki preferring to get on with the mahi (work) and not focus on self-promotion as much as they should. However, this is exactly what digital kaitiaki should be doing more of – self-promotion, but the challenge is that its anti-thesis to Māori values and principles. Digital kaitiaki have entrepreneurial skills but self-promotion is a constant cultural challenge.

It is now that leadership from well-established digital kaitiaki is needed. Those that have "broken through" that cultural challenge of self-promotion. These leaders can encourage potential digital kaitiaki to "step up" to the next level to become successful. While these leaders and entrepreneurs focus on their businesses, we have noted from this study's participants, that it is a core responsibility of digital kaitiaki to contribute value back to others, and being a role model for others, especially the next generation, is key to that.

Preliminary recommendations

1. Develop a tuakana/teina model of support and mentoring for emerging digital kaitiaki. Barnett and Wiata (2017, p. 16) state that a mentoring model of this type,

"can be of significant value to mentors and mentees...if implemented in a culturally appropriate manner"

2. Promote and support further research into wāhine Māori / rangatahi Māori digital kaitiaki. Research with specific focus on these two groups.

3. Digital kaitiaki promotion at local and regional forums. Highlighting digital kaitiaki and their expertise in commercial and academic forums.

4. Governance and leadership programmes - Assist with local and regional programmes that promote more wāhine Māori and rangatahi Māori in decision-making positions.

CHAPTER SIX: NAVIGATING THE WATERS

Wāhanga Tuaono: Kia haere pai ki te Moana

For this research, maintaining Kaupapa Māori practice includes incorporating Māori imagery and terminology. In this, it follows other models based on Māori metaphors in other industries such as health (Durie, 2003; Pere, 1988) and education (Durie, 2001). This chapter proposes a model, based on another common element within Māori culture, the "waka". The waka model supports the themes identified in chapter five, which are underpinned by Māori cultural values and principles, and in so doing situates digital kaitiaki in leadership and guardianship roles. While a waka model has been used in other studies (Bevan-Brown, 2011; Maxwell et al., 2019), this thesis draws from those studies, and partially adapts them to apply to the context of this research. Given the dearth of literature for Māori in the IT sector, the waka model is part of a project to augment the small body of existing work, and to enrich it from the perspective of an indigenous-Māori worldview.

In introducing the waka model, the chapter adds to earlier referencing of the ocean metaphor – Ngā Pāhekoheko ki te Ao Hangarau. Chapter two represented the various ocean elements as forces impacting upon the digital kaitiaki travels in the IT industry. This chapter similarly re-situates the reader into a Māori worldview context when understanding how engagements in the IT industry are portrayed in line with the waka model and its long, rich and continuing history. There is literature detailing the Māori origins of ocean travel on waka from the time of their arrival to New Zealand up to the present-day use of waka for sport, livelihood, and retracing ancestral journeys (New Zealand Ministry for Culture & Heritage, 2006). This lends further support to the rationale for using the waka since, as such as an important part of Māori culture over time, it is relevant in showing how Māori (digital kaitiaki) can traverse challenges and create change in whatever new environments they are faced with.

Bevan-Brown (2011) presents the Waka Tino Whakarawea model to portray a culturally appropriate and effective provision for Māori learners with special needs. Bevan-Brown's model incorporates eight principles identified from data analysis of the 78 participants surveyed. The principles are Kaupapa Māori; importance, relevance and beneficence; participation; empowerment, tino rangatiratanga (self-determination)

and Māori control; accountability; high quality; appropriate personnel; and equality and accessibility (Bevan-Brown, 2011, p. 27). All of which align very closely to the themes of this research, especially Kaupapa Māori and participation with Māori identity and organisational culture; empowerment with motivation; accountability with responsibilities; and high quality, equality and accessibility with role models.

Maxwell et al. (2019) present the He Waka-Taurua framework for portraying multiple worldviews to achieve holistic co-governance/co-management. This framework was developed following workshops with Māori about how kaitiakitanga can be incorporated in marine management. The waka-taurua (double-hulled waka) was identified as an appropriate methodology for researching Māori identity with the added advantage of allowing two worldviews (Māori and non-Māori) to come together temporarily to achieve a common purpose (2019, p. 2). Their model aligns with the purpose of this thesis to find ways in which Māori can participate in a non-Māori environment, in this case the IT industry. The double-hulled waka allows two groups to come together but also detach from each other once a common purpose has been achieved. This chapter considered a double-hulled waka as a model going forward but recognises that the waka-taurua is about co-governance and co-management, whereas this research focuses on the digital kaitiaki and how they traverse a landscape that contains Māori and non-Māori alike.

He Waka Kaitiaki Matihiko

The model in Figure 3 represents a waka that a digital kaitiaki would use when they are travelling through the IT industry, influenced by ocean elements described later in this chapter. Starting from the left, the Taurapa is the stern-piece of the waka which traditionally signifies a spiritual connection to Māori gods and so represents the digital kaitiaki's Māori culture, heritage and background. The sides of the waka – the Rauawa – represent the responsibilities the digital kaitiaki must adhere to while remaining with them in a supportive role. In that way, the Rauawa keep all things that need to stay in or stay out of the waka. The hoe (oars/paddles) and the tools used to create change, move the waka in the right direction. The kaitiaki at the front (a wooden statue) is a representation of a spiritual guardian on the waka journey. This is usually of an ancestor, god or appropriate protector of spiritual aspects for the waka. For this research, it represents the motivation for the digital kaitiaki to continue and stay strong

and maintain course to their destination. The Tauihu is the prow of the waka and like the Taurapa, has a connection to the Māori spiritual realm. This represents the digital kaitiaki's personal and Māori identity, and leads the way for all the digital kaitiakis' interactions with the world around them. The last part of the waka is the hull or Takere that represents the Māori values that underpin everything that the digital kaitiaki does. If these values are compromised, it weakens or jeopardises the whole waka and so it's critical that these are upheld at all times.

Figure 3: He Waka Kaitiaki Matihiko (Digital Taniwha Waka)

Adapted from image https://basicmaori.blogspot.com/2016/05/waka.html
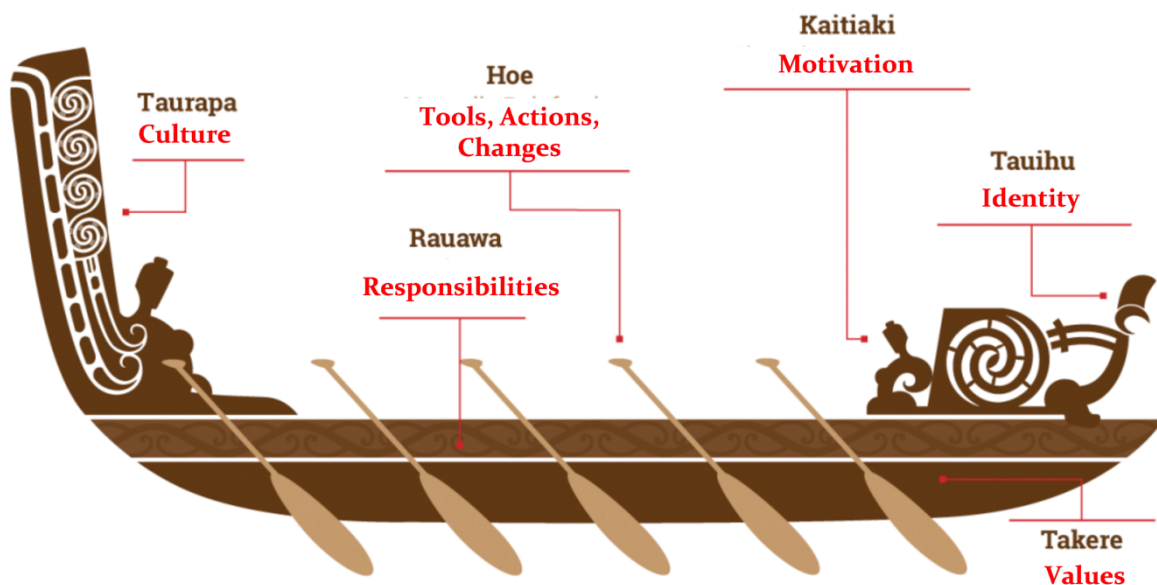
Te Āhuatanga o te Ao Matihiko - Elements of the digital world

There are many influencing factors on a digital kaitiaki's journey in the IT industry, and each part of the waka model enables the kaitiaki to address each factor. Whether it is facing head on, turning to avoid, or back tracking and resetting another course, each can be done with cohesive operation of the waka, the digital kaitiaki and those travelling with them to drive the waka forward. One key element not shown in the waka model are other digital kaitiaki, hoamahi (colleagues) or kaimahi (employees, workers). Depending on the direction the digital kaitiaki is going, they may enlist few or many hoamahi and/or kaimahi to help them achieve their goals. It's the hoamahi or kaimahi that take hold of the hoe and help move the waka to where it needs to be.

At times other key (ocean) elements can assist and drive the waka forward, and, at other times, it can also create challenges for the journey. Elements such as ngā kapua me ngā hau (clouds and winds), ngā tamariki o ngā atua (birds and sea creatures), and ngā ngaru me ngā tai (waves and tides) are primarily used to guide the waka to achieving the kaitiaki's goals, objectives, and ultimately vision and mission (Te Pae Tawhiti). Along the journey, the waka will encounter moutere (islands) that can be seen as representations of customers, clients, or successful outcomes for the kaitiaki.

The Waka Kaitiaki Matihiko provides this research with a culturally appropriate metaphor to portray the components a digital kaitiaki will encounter when they are or want to participate in the IT industry. The waka enables them to participate in a way that creates changes for them, and those that they engage with along the way. The thesis suggests that, just as in education, these metaphoric considerations can strengthen a kaitiaki's Māori identity while, at the same time, embedding the forward journey into non-Māori IT environments. The next chapter will look at how a digital kaitiaki can adopt and adapt leadership models to help them navigate their waka in the best possible way to reach their goals.

CHAPTER SEVEN: CHIEF OF THE WAKA

Wāhanga Tuawhitu: Rangatiratanga mo te Ao Matihiko

In seeking to increase Māori participation and Māori leadership in the IT industry, the thesis addresses challenges surrounding both. This chapter set these concerns in a wider historical and research context. It begins by providing background about leadership in general from the literature, then describes various leadership styles within Māori contexts, and how they have evolved from traditions, often existing before the arrival of Europeans to New Zealand, to the present. As mainstream leadership evolved, so, as Katene (2013) found, Māori leadership styles developed among communities and industry groups. In addition, the chapter examines leadership in the New Zealand IT industry environment and how that has evolved, especially from transactional to transformational phases, over a shorter timescale. The process of comparing and contrasting these three areas – leadership, Māori and the IT industry – serves to highlight the relationship between them. Building on that process, I seek to identify elements of the next step in Māori leadership evolution relevant to their growth in IT.

For Māori, the potential development of a relevant leadership style must take into account the worldviews of the practitioners and the contextualised needs of the communities in which they practice (Ruwhiu & Cone, 2013; Zhang et al, 2011 as cited in Ruwhiu, Elkin, Wolfgramm, Spiller, & Voyageur, 2016, p. 316). Building on those findings, this research suggests the need for a leadership style that is more aligned to Māori culture and values (Hale & Fields, 2007; Mittal & Dorfman, 2012) as well assisting in promoting greater Māori IT participation rates. It proposes an evolved Māori leadership style that also supports the various types of digital kaitiaki, their environments, and the complex challenges that they may encounter during their IT life journey. In short, it puts forward a Māori leadership model that traverses diverse social, economic, political, and increasingly technological environments.

Leadership

Leadership studies cover an extensive and wide-ranging field over centuries. From early leadership theories, such as the "Great Man theory" (Bass & Stogdill, 1981;

Carlyle, 1888) to multi-faceted "transformational theory" (Bass & Riggio, 2006; Bass & Steidlmeier, 1999; Kouzes & Posner, 2007), theorists have evolved different leadership theories, styles, traits and characteristics. This next section aims to show the evolution of leadership theory, and to illustrate how each of the three can be shown in a Māori leadership context, during the period that the theories were current.

Carlyle's (1888) seminal work on the Great Man theory proposed that only a man could have the characteristic of a great leader. For him, leadership traits were intrinsic – leaders were born to become great leaders, and not made. This chapter will go on to show how this approach matches Māori leadership styles during the pre-European arrival period, as well as from the mid-1800s to mid-1900s. In expanding Carlyle's theory, further studies into traits highlighted how inherited traits in good leaders, if recognised correctly, could then be used to identify potential future leaders.

Later theorists (Nelson & Cohen, 2015) writing on the traits approach included situational variables as significant influences on a leader's decision-making processes. These variables comprised such elements as environmental factors, the situation of the followers, and organisational features that weighed on a leader's decisions (Greenleaf, 2002). Leadership theories continued to develop and ranged from situational (or contingency) thinking through to style and behavioural theories (Bass & Stogdill, 1981; House, 1996). Further research about process leadership theory saw the appearance of servant leadership, charismatic leadership, religion-influenced leadership, and increased follower-consciousness (activist) leadership (Avolio, 2007; Katene, 2013; Khan, Nawaz, & Khan, 2016; Ruwhiu et al., 2016). These various kinds of leadership, in particular servant leadership (Greenleaf, 2002), developed almost in parallel to what was happening in Māori leadership during the years of European settlement in New Zealand. The term servant leadership was coined by Robert K. Greenleaf in the 1970s. He defines servant leadership as:

> The servant-leader is servant first... It begins with the natural feeling that one wants to serve, to serve *first*. Then conscious choice brings one to aspire to lead... The difference manifests itself in the care taken by the servant - first to make sure that other people's highest - priority needs are being served. The best test, and difficult to administer, is: Do those served grow as persons? Do

they, while being *served*, become healthier, wiser, freer, more autonomous, more likely themselves to become servants? And, what is the effect on the least privileged in society? Will they benefit or at least not be further deprived? (as cited in Farling, Stone, & Winston, 1999, p. 51)

During these times, leadership research also focussed on two contrasting, and recurring, leadership types: transactional leadership and transformational leadership.

Since Burns' (1978) influential work on transactional leadership and transformational leadership, these have been foundational leadership theories for many research articles, books and projects. Burns (2010) describes a transactional leader as a person who engages with their followers through reward-centric action, whereby an exchange of activity (known as leader-member exchange) is done for something of value (J. M. Burns, 2010; Gold, Thorpe, & Mumford, 2010; Lowe, Kroeck, & Sivasubramaniam, 1996). Lowe et al. (1986) clarified the idea of a transactional leader as a person "who operates within the existing system or culture, has a preference for risk avoidance, pays attention to time constraints and efficiency, and generally prefers process over substance as a means for maintaining control" (Lowe et al., 1996, p. 387). Avolio and Bass (1994) augmented this reward relationship by stating that leaders also provide positive and active exchange such as positive reinforcement for work well-done, and acknowledgement with bonuses or promotions (as cited in Khan et al., 2016, p. 3). This leader-member reward focused environment is comparable to the high pressure working environments of the IT industry, during the late 1970s to the mid-1990s (Kalleberg, 2011).

Transformational Leadership

While a transformational leader may use transactional methods where relevant, the literature concurs that he or she is different from a transactional leader (Bass, 1985; J. M. Burns, 1978; Waldman, Bass, & Einstein, 1987). Unlike the risk-adverse, constrained transactional leaders, transformational leaders are not satisfied with the status quo. They aim to change or create new environments through good communication of a vision, and a focus on a more fulfilling purpose beyond just achieving an outcome or meeting a deadline (Avolio & Bass, 1988; Yammarino & Bass, 1990). They are people who actively try to understand the "common values,

beliefs and goals" (Khan et al., 2016, p. 3) of followers and pursue the goal of encouraging them to achieve for the greater good (Kouzes & Posner, 2007). This involves inspiring followers to work for something that is greater than the individual, and beneficial to many as highlighted by Bass (1985):

> The [transformational] leader accomplishes this by raising the level of intellectual awareness about the importance of valued outcomes, by raising or expanding individual needs, and by inducing a belief in transcending self-interest for the sake of the team or organization. (as cited in Lowe et al., 1996, p. 387)

Academics and companies have researched and tested this evolved leadership type since it was first described (Carrison, 2016; Judge & Piccolo, 2004). The IT industry is no exception (Chatham, 2010; Muller, 2011). Among other uses, IT-related companies have adopted transformational leadership: to meet the changing needs of its customers: to keep up with rapid advancements of technology; and to maintain a competitive advantage in the market (Li, 2010). This thesis proposes transformational leadership as the underpinning foundation for the new leadership style described later in this chapter.

Māori leadership: Traditional / Pre-European arrival in New Zealand

Māori leadership has commonalities and differences from the evolution of leadership recounted in leadership textbooks. As a tribal culture prior to the arrival of Europeans to New Zealand, Māori had their own leadership systems and practices. These styles evolved and changed over time, but all adhere to certain fundamentals that continue to this day. These fundamentals, known as kawa (protocols) and tikanga (rules), are essential for effective Māori leadership (Diamond, 2003; H. M. Mead, 2003b). The key groupings of Māori society consist of waka (canoe), iwi (tribe), hapu (sub-tribe), and whānau (the family unit). Māori leaders are referred to as Rangatira (chief) (Ballara, 1998; King, 2004; R. Walker, 2004). Rangatira were determined by their whakapapa (genealogy/lineage) and personal qualities. Within these kinship structures, a rangatira can be a leader of the whānau (e.g., the father), and also a rangatira of the hapu and/or iwi. When rangatira were elevated to positions of greater responsibility, it

was the collective who recognised the rangatira's skills, expertise and experience in multiple areas of Māoridom (E. Best, 1974; Diamond, 2003; King, 2004).

In those times, according to (Katene, 2013), leadership styles were transactional with rangatira who gave directions and "had the authority and right to issue commands" (p. 12). Rangatira of waka held this authority just like captains of ships today. Any defiance was usually met with swift and severe consequences. In relation to the other kinship sections, the whānau is the foundational unit of Māori society and it is here that the first lessons of leadership are taught and experienced. Mātua (parents), kaumātua and kuia (grandfathers and grandmothers) teach lessons to tamariki (children). Ballara (1998) and Mead (2003b) identify key leadership attributes that are taught. These include aroha (love), manaaki (respect/compassion), mana (power/status), tapu and noa (sacredness and safety), and whanaungatanga (relationships) (Ballara, 1998; H. M. Mead, 2003b). From the whānau unit, leaders were chosen to participate in the next levels of the kinship structure. The next immediate level is hapu, which is a union of whānau units who are descendants of a common ancestor. Following that is the iwi unit, which comprises hapu who are connected by common ancestors and waka. This somewhat simplifies complex relationships, but although this chapter will not go into detail about those complexities, it should be noted that each of these kinship units have also evolved over time and relationships are intertwined.

Rangatira (chieftainship) leadership, as stated above, followed a transactional leadership style, which was one of authority, power and influence. Later in this chapter, I will consider how rangatira leadership evolved from transactional leadership to transformational leadership. The evolution involved a shift away from power and control to more mana-enhancing (pride and value enhancing) and mana-motuhake (self-determination, independence) attributes, and a shift that recognises all people, whatever their current status, as worthy of being considered rangatira (leaders) in their own right (Katene, 2010; R. Walker, 2006).

Other traditional leadership influences

There were other leadership forums in which Māori governed (and guided) their communities and larger social groups. There were the ariki, tohunga and kaumātua leadership environments. An ariki leader, usually the firstborn of the most senior

whānau, was the most senior member of Māori aristocracy and was also known as a "paramount chief." Ariki status was the highest status in Māori society, and often ariki did not participate in lowly daily decisions but only in very tapu (sacred) decisions and situations. Ariki were (and are) a unifying presence, respected and revered by all Māori communities.

Tohunga leaders were the most sacred of leaders. They usually lived by themselves within a Māori community, and interacting with them was done at a distance. Tohunga and the community had a reciprocal relationship, even though it was common practice that people were not allowed to physically touch a tohunga. Tohunga were respected for the extensive knowledge they had of the world, both physical and spiritual. Tohunga leadership was one of guidance, healing, and extensive knowledge of unusual natural phenomena, of supernatural behaviours and of all things tapu (sacred) (Katene, 2013; H. M. Mead, 2003b; Papakura, 1986). Tohunga were professional experts of rituals, and their leadership style brought safety and spiritual welfare to the community. This style could be considered as charismatic and mystical (Conger & Kanungo, 1998; Khan et al., 2016).

The kaumātua leadership environment was, and is still, the most common and prevalent leadership type amongst Māori. It is closely followed by ariki and then tohunga leadership. Hapu and whānau recognise their elders (kaumātua) as the main leaders of their groups. While often these roles are held by koroua/koroheke (elderly men), leadership roles are also held by kuia/rūruhi (elder women) and all kaumātua are determined by whakapapa, age, knowledge, wisdom and experience (Te Rito, 2006; Winiata, 1956).

Traditionally, Māori had established leadership roles and responsibilities that were based on the wellbeing of family members and relatives. While they included a clear hierarchy that employed a transactional leadership style, there were variations over time depending on the circumstances and abilities of particular leaders. One noticeable feature was the emergence of charismatic leadership witnessed by followers who identified certain leaders (ariki or tohunga) to be leaders beyond the realms of the physical day-to-day operations of the community, and having close connection to the spiritual world or supreme authority and status (Conger & Kanungo,

1998; Khan et al., 2016). The next section considers how the arrival of Europeans to New Zealand influenced a shift in Māori leadership. Māori adapted their leadership styles to the various cultural, power and authority changes that were occurring and, also in anticipation of the changes to come.

Traditional leadership challenged: The European arrival in New Zealand

Prior to the arrival of the Pākehā (Europeans) (Ballara, 1998), iwi were constantly asserting their mana (power, authority) across tribal boundaries and with other iwi rangatira. Typically, iwi or hapu would join forces with each other by way of arranged marriages and would challenge enemies through warfare. The Pākehā brought two significant practices that changed how rangatira continued their traditional practices, and, subsequently, even see rangatira adapt their leadership styles to the evolving society of Māori and Pākehā. These two practices were the introduction of western religion (particularly Christianity) and technology (especially muskets) (Crosby, 2017; Morrison, 2013; Surhone, Timpledon, & Marseken, 2010).

The introduction of organised religion such as Christianity was a challenge to many rangatira practices and privileges. It challenged the rangatiras' mana, especially since such practices as warfare, polygamy and slavery were not acceptable in the Christian religion. Christianity also challenged the concept of tapu, which is a significant value within Māori society that underpins many behaviours. Pākehā did not adhere to things "tapu" as their Christian-view of sacredness was considerably different to that of Māori. Māori would come to question their traditional tribal leadership styles when Pākehā, unlike Māori, would breach tikanga and kawa without consequence (Morrison, 2013; Newman, 2013).

A further and active challenge to traditional Māori religious beliefs, came with the introduction of missionaries, who were tasked with converting Māori to Christianity. While unsuccessful at first, most Māori, including many rangatira, eventually adopted the Christian faith. It can be argued that this was an indication of rangatira recognising the inevitable impact Christianity would have on their people. Some of these rangatira would emerge as charismatic leaders espousing peaceful ways of leading their people

and engaging with other iwi and Pākehā (Brown, 2008; Conger & Kanungo, 1998; Elsmore, 1999; Pybus, 2002).

Not that this ended fighting. Indeed, as Crosby (2017) and Walker (2006) observed, the musket gun was a key technological introduction to Māori warfare. The arrival of the gun impacted significantly on the decisions of rangatira and initiated new ways of engaging in warfare with rival iwi and of asserting their mana beyond their current tribal boundaries. This era was better known as "the musket wars" when tribes from the North Island (the first tribes encountered by Europeans) held a considerable advantage over their enemy and would overcome them with far fewer casualties (Belich, 2001; Cloher, 2003; A. Kerr & Wright, 2015). The adoption of the musket gun elevated rangatira mana (power, authority) to heights where their stories of conquest would travel swiftly across the country. Eventually, as the access to muskets became easier for all tribes, the imbalance of power amongst iwi would equalise and leadership decisions would turn towards trade and dialogue (Crosby, 2017; Katene, 2013; Surhone et al., 2010).

This dual introduction – of Christianity and musket weapons – challenged traditional Māori leadership practices and styles. These, in turn, adapted to the needs of the iwi members and the changing social and political landscape. A new culture had arrived. Initially, the Pākehā imparted new practices and wanted to establish a formal relationship (e.g., Treaty of Waitangi). Eventually, however, they imposed their culture and had an impact on traditional Māori leadership structures (Winiata, 2014). From this undermining of leadership structures through to increasing transactional leadership behaviours, the arrival of the Pākehā not only began the cultural change culminating in contemporary New Zealand, it also introduced leadership styles still active today. One major emerging style was charismatic leadership. This came from rangatira who embraced Christianity and who later developed their own denominations influenced by the Christian faith (Belich, 2001; King, 2004).

Charismatic leadership motivated by religion and politics

Over time, Māori became disillusioned with the many injustices that had arisen with the arrival of the Pākehā. Pākehā dispossession of Māori lands and disruption of their way of life, along with the undermining of tribal leadership, broke peaceful relationships

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between the two peoples. These injustices helped prepare Māori for change to a new leadership structure that could offer hope and positive change. One outcome was the rise of charismatic leadership amongst existing rangatira, which elevated some iwi members to rangatira status (Katene, 2013).

Conger and Kanungo (1998) define a charismatic person as someone who "has special qualities that sets them apart from the ordinary person and can be considered to have exceptional powers or qualities not available to the ordinary person but regarded as of divine origin or as exemplary" (p. 12). Examples of such charismatic leaders emerged within Māori leadership. These people brought others together through their unifying messages, visible strength of conviction, and an energy that seemed to come from a higher power (Werry, 2018). These rising rangatira had the ability to cooperate with and inspire people into action rather than coerce or command them in more traditional transactional behaviours. This shift in leadership style was taken as empowering by those disenchanted and disheartened Māori who were eager for change. Thus, a transition in Māori leadership began.

Rangatira with this leadership style were not only chiefs but referred to more as prophets by Māori communities of their time (Kirkwood, 2000). There were two distinct types of Māori prophets, those who lead in war and hope, and those who led in political change. The prophets of war knew the importance of leading from the front and by example, and, augmented by inspirational words of change, they would motivate followers to join their fight. The prophets of hope would inspire followers through their use of the words of the gospel and eventually establish prophetic movements that were akin to denominations of Christianity.

These prophetic movements still remain. Many of these prophets were linked to churches and had been Methodist preachers and so were well-versed in the old testament scriptures (Binney, 2011; Keenan, 2015). Coupled with the knowledge of the Māori world, they were able to show connections between the divinity of the religious teachings and traditional Māori religion beliefs. This ability to draw similarities, with what had familiarity for followers, increased their rangatira status in their follower's eyes.

The prophets of political change were, however, more focussed on resistance to such injustices as confiscation of land, and the European government system. Two well-known Māori prophets, Tohu and Te Whiti, led their people to passively resist European soldiers who wanted to remove them from their land at Parihaka in Taranaki (Keenan, 2015). None of the Māori used weapons when the soldiers arrived and met them instead with silent protest. Sadly, their responses were not matched by the soldiers. Other rangatira recognised that government were enacting legislation to remove Māori rights and independence over land. This motivated rangatira to establish their own independent Parliament and governance structures. There were two governance groups created, one called Kotahitanga (an independent Māori Parliament), the other called Te Kauhanganui (the Kīngitanga Parliament). Kotahitanga was established and supported by a generation of leaders who would come into their own in the following years. The Kauhanganui was established by the Māori King of the time, King Tāwhiao and supported by the Kīngitanga supporters (Karena, 2008). Both of these movements were significant in allowing rangatira to focus on rangatira authority. Unfortunately, for Māori unity, neither Kotahitanga nor Kauhanganui lasted due to the differing views of tribal chiefs from around the country. However, versions of these structures have since been established and continue to this day (H. Sadler & Mackinnon, 2014; Waikato-Tainui, 2016).

The strong influence of religion and politics on leadership motivated a transition from traditional to charismatic styles for Māori. This new style was readily embraced by leaders and followers alike, as the adaptation addressed inequalities and discrimination – particularly, land confiscation – and the associated alienation. While the efforts to re-establish Māori independence from European governance were unsuccessful, they helped spark the next transition of leadership style to the form of organic leadership.

Organic leadership and service

Māori had a long familiarity with warfare. During World War 2, in service of their country and their people back home in New Zealand, Māori soldiers made a memorable impact through great feats of bravery. These courageous acts of bravery were born out of being at the "coal-face" of action under extremely challenging circumstances. Organic leaders aim to raise others and put themselves in service of others or try to best serve

the needs of their followers. Māori soldiers illustrated this kind of leadership (Soutar, 2008). Soldiers from the 28th Māori battalion and Māori in other armed forces produced the next wave of Māori leaders.

On their return from war, some took up positions in public service. With their skills of execution, strategy, organisation, and the organic leadership experience they attained on the battlefield, they were highly regarded, and their achievements in public service are still referenced today (Cowan, 2011; King, 2004; Soutar, 2008). This was an early example of organic leadership by Māori. A more recent example is the new Māori academics who emerged, and are continuing to emerge, across the tertiary institutions of universities, teachers' colleges and polytechnics. The latter inspired my journey and my ambition to help emulate their success in the IT industry.

From the 1960s, Māori intellectuals were rising to positions of responsibility within educational institutes. They had a strong focus on developing learning opportunities and programmes for Māori to enable them to have a better start and greater equality of opportunity in a western dominated world. These leaders were not only serving as role models and creating safe spaces for Māori to occupy in education, they were also becoming senior advisors to Māori forums like conferences, land trusts, and other development groups. They were taking up leadership roles across multiple fields where people – both Māori and non-Māori – were seeking their intellectual expertise and knowledge. One very important initiative that these Māori academic leaders established was the MANU AO academy in 2009 (Massey University, 2009). This academy aimed to accelerate Māori leadership, advance Māori scholarships and strengthen links between Māori academics and Māori professionals.

Organic leadership is still prevalent within Māori leadership forums today. Nevertheless, from 1970 to the mid-1980s, it took a back seat to the growing unrest amongst Māori about the ongoing disregard for Māori language and culture in society. The Māori renaissance was beginning and activities to recognise Te Reo Māori (the Māori language) as a valid and official language of New Zealand were at the forefront. These restless Māori went on to become the activists and action leaders of their time. From the 1960s to the 1980s Māori underwent a kind of "awakening" or "Māori consciousness." This was the beginning of what became known as the Māori

renaissance that called for and promoted official recognition and acknowledgement for Māori language and culture (McNicholas, 2009). Alongside disenfranchised and dispossessed Māori seeking their traditional customary rights, highly educated, intellectual Māori, some of whom had worked through to leadership positions within government and non-government, also acted as leaders in the new consciousness of this Māori renaissance. Māori had become proficient in communicating the wishes of Māori to Pākehā, and of Pākehā to Māori. This ability was highly sought after by the governments of the time and Māori, and these two leadership styles can be identified activist and servant leadership.

Activist Leadership

The new wave of Māori leaders began with a number of now well-known Māori activist events during the 1970s. These included the land march on parliament led by Dame Whina Cooper, the occupation of Bastion Point led by Ngāti Whātua iwi, the occupation of the Raglan Golf course led by Eva Rickard, and the frequent Waitangi Day protests (Katene, 2013; King, 1991; Roxborogh, 2017). Also, all of these leaders attracted support from groups of people willing (if necessary), to go to jail for taking action for their cause. Many Māori, who no longer had faith in the justice processes to regain their land rights, grew frustrated in the 1970s and so turned to activist protests (Glassey & Welham, 2003). The activist leadership approach raised awareness amongst Māori and non-Māori across New Zealand. These protests, often insisting on a change of legislation and the right to be fairly heard, targeted the government. The resulting political pressure forced the government to put in place new initiatives to address the concerns raised in the protests by the activist groups.

This may seem like a long detour but, for me, and for many other Māori, our history is alive and relevant. Nevertheless, this development raises the question of what does this type of leadership mean for this research? The IT industry, like most industries, has numerous sub-groups that support areas within the industry, for example technical, management or leadership areas. Each group raises awareness for each of their specific area. This can be relevant for Māori and the IT areas important to Māori. Māori-specific IT groups across New Zealand are raising awareness about the relevance and importance of Māori participation in the advancement of New Zealand's IT industry. They highlight areas such as a Māori perspective of the world, a Māori

creative approach to IT solutions for world-problems, and innovative methods used to address social-economic issues that face Māori and non-Māori alike.

This type of activist approach aims to awaken those in decision-making roles, to get them to really listen to their communities (including Māori in the different communities). The activist groups instigated actions that led to a change of thinking in the minds of decision-makers. These include the need to recognise: 1) the Māori voice, and 2) the opportunities Māori bring to the industry. The IT industry is constantly looking for creative and innovative ways to serve their customers and stakeholders and Māori have already demonstrated strengths in this ability. While the formation of these Māori-specific IT groups may be seen as a gentler type of activism, it is still activism albeit infused with a spirit of passive resistance to non-responsiveness to Māori and Māori concerns.

The next wave of leaders came in the form of academic/intellectual and servant leadership. These were Māori leaders or Māori politicians starting to appear on the government landscape. Most of them had strong academic backgrounds and were part of the emerging Māori intellectuals from the 1960s through to the 1980s. Many working as Māori public servants in government agencies acted as "agents of change" in instigating changes from within the government system. Alongside their skill in communicating and operating within European contexts (e.g., government forums and policy), they were aware of the needs of Māori. What these public servants did was influence and created beneficial changes for Māori that remain today. Benefits like the establishment of te kohanga reo – the Māori language total immersion preschools; the institutionalising of the Māori language as a recognised official language; and the creation of Māori-specific departments to deal with Māori-centric issues (e.g., Dept. of Māori Affairs).

What does this mean for this research? It shows that Māori groups are able to influence decision-makers, even within euro-centric agencies, in ways that benefit both Māori and Pākehā. As a form of role modelling, they illustrate how Māori IT groups can influence a highly euro-centric field like the IT industry. This suggests that the formation of Māori IT groups is important to create pathways for Māori who want to participate more in the IT industry.

Open and Wayfinding Leadership

Technology is advancing at exponential rates and allowing a new culture of engagement within society. The mobile phone, coupled with internet and application technology, now enables people to access, communicate, record and store information any time of the day or night, wherever they are in the world. People can be informed almost instantaneously on all things they want – or sometimes, don't want – to know.

What does this mean for current and new leaders? The words transparency and authenticity surface frequently in different discourses but technology has helped create a level of transparency that is out of a person's control. Staff, for example, can, if they want, find out about their leaders' personal and professional lives without their permission. Social media channels like Facebook, Twitter and LinkedIn are channels where a person's "digital footprints" are available for almost anyone. This growth of openness has transferred into the concept of open leadership. Open leadership enable leaders to benefit from technology like social media, to be more transparent to staff and their target audiences (Li, 2010). It can let outsiders see a company enacting their values and principles in a public and open forum. It has the potential to invite constructive and immediate criticism from customers, staff and the industry. Leaders taking advantage of this technology can build and strengthen trust internally and externally.

For Māori, social media technology is enabling relationships to be maintained across physical boundaries. This is important as many Māori move away from their tribal or homelands. Since whanaungatanga (relationships) are vitally important for Māori, Māori have embraced social media to share, discuss, and preserve those kinship bonds (whānau/hapū/iwi links) (Keegan, 2019). Māori in IT can be considered as relationship builders because of their skill in technology and in identifying opportunities to connect. Open leadership is a style that could be hugely beneficial for Māori in IT. Its transparent nature complements the cultural value of manaakitanga (respect for others), because of its semi-public forum, leader engagement is open to the audience, where they can see how others are being treated by their leaders. Other aspects of

open leadership are also beneficial to the development of a new Māori leadership style.

There are four aspects or "archetypes" of open leadership of which one is the most desirable – the realist optimist. This person understands the opportunities and benefits of being open, as well as knowing the barriers. A realist optimist is a person who acts upon an opportunity even if they don't have initial buy-in from senior decision-makers. They believe that if management sees the benefit in action, that they will like it and approval to continue becomes easier (Li, 2010, p. 175). Māori are faced with many barriers within their environments and seeking approval, permission or even acceptance can be a significant challenge for them. However, with their natural ability to collaborate with others, and being optimistic about their ideas, Māori carry on and get things done (Dawson, 2012; Henry, 2007; Zapalska, Perry, & Dabb, 2003).

This open, transparent and optimistic leadership style is likened to another that is respectful of Māori culture and values. Wayfinding leadership is a new and emergent style that focusses on a guiding or 'navigating' people towards achieving a goal or success (Spiller et al., 2015). Constructed by Māori for Māori, underpinned by Māori values, and founded on traditional Māori navigation techniques, this type of leadership could have been specially designed for Māori in IT. Wayfinding leadership can help guide Māori through a number of current challenges in the mainstream IT industry while sustaining links with Māori history, tradition, and skills. While fairly new, these open and wayfinding leadership approaches can be seen as part of the leadership styles during treaty and post-treaty settlement periods. The nature of openness, transparency and careful navigation through significant emotional, historical and culturally steeped negotiations were (and are) crucial during Treaty of Waitangi tribal settlements.

Treaty & Post-Treaty settlement leadership

Māori have suffered many injustices at the hands New Zealand government during the European settlement years. These turbulent years saw the wrongful confiscation of land and imprisonment of Māori for which the current treaty settlements aim to address. The first two Māori tribes - Ngai Tahu and Waikato Tainui settled their Treaty of Waitangi grievances with the government with the combined leadership of Māori

and Non-Māori (Fisher, 2016, 2017; O'Regan & O'Regan, 1998; Tainui Maori Trust Board, 1997). These settlements were significant events for both Māori and non-Māori as they hoped to assist Māori to move forward from a grievance position to a future-forward positive position.

Both tribes have established tribally focused and commercially sound entities as a result of their respective treaty settlements. These entities deliver benefits to their tribal members as well and generate significant revenues for further investment and returns to the tribe. The leadership within these entities have learned from the past events between Māori and Pākehā and are by the leadership styles of their previous generations. They are the culmination of multiple leadership styles which are activated when needed to resolve their treaty claims and grievances. An activist, open and wayfinding approach when working with non-Māori, and organic, servant and charismatic approach when working with their people. So, can a similar approach be applied when seeking a leadership style for Māori and the IT industry?

Taniwha Leadership – the guardian, the navigator, the leader

The next evolution of leadership I propose from this research is called Taniwha leadership and is for Māori who engage in predominantly non-Māori environments. The objective of this leadership style is to promote Māori-centric spaces within environments such as mainstream sectors like finance, information technology, law, and similar euro-centric industries. The term "Taniwha" is the Māori word for mythical, spiritual creature who could be a monster, a guardian, or a leader (chief). For this research, the term - Taniwha is used in the context of a guardian or leader. As stated in a well-known proverb from the Waikato tribal area in the north island of New Zealand, the word taniwha refers to a chief, "Waikato Taniwharau – he piko, he taniwha, he piko he taniwha. Waikato of a hundred chiefs, at every bend a chief, at every bend a chief" (H. M. Mead, 2003a, p. 421).

Taniwha leadership is underpinned by many of the transformational styles mentioned earlier in this chapter. They key styles are activist, servant, open and wayfinding leadership. A leader of this style will need to be tenacious, courageous, and confident in their decision-making processes. The reason is that they are already in a non-conducive environment for Māori that support different worldviews and value systems.

They may need to lead the way through in an activist-type manner if necessary and fight their way through the noise of non-Māori voices to be heard. They will need to recognise that you can be as good (if not better) than the non-Māori in the room. Just because it's a non-Māori arena, which is predominantly a western management environment, doesn't mean they should subjugate themselves to the context.

Chapter 6 introduced the waka navigation framework of how participants traverse the IT world. This chapter covered the history and evolution of leadership for Māori and concluded with the advocacy of a newly proposed leadership style for Māori in IT. The next steps are to activate and inspire burgeoning digital kaitiaki through action and interventions. Interventions that recognises the waka framework, able to encapsulate the digital taniwha leadership style, and to bring about change for Māori, for IT and for Māori in IT as a whole.

CHAPTER EIGHT: TOWARDS A SEA CHANGE

Wāhanga Tuawaru: Te Huringa o te Tai

This penultimate chapter draws together the activities, the experiences and the lessons to date. In addition, as part of a thesis with action research, it situates the learnings as part of ongoing actions by identifying and setting out a series of recommended interventions for ongoing and future actions. As I, and others, were engaged in growing Māori in IT before this doctoral study, as well as during it, I, and others – including both continuing fellow travellers and new members of the digital kaitiaki – will continue that engagement after the thesis is submitted. Nevertheless, the thesis has added value to my endeavours, and the endeavours of others, especially, other digital kaitiaki. Accordingly, this chapter extracts value from the experiences and interactions that have emerged during the doctoral journey and distils them into a series of interventions informed by experiences, research and theory.

At the outset, I acknowledge that there is no attempt to order these interventions into any kind of priority ranking. That would be difficult, if not impossible, given that I have no jurisdiction over the participants needed to execute them. Instead, I present the interventions in a different kind of action framework that has had considerable traction in mainstream organisational thinking. The framework is drawn from work by Chan Kim and Mauborgne (2005; 2014, 2015; 2017), the influential authors of what can now be called the Blue Ocean movement as it has impacted across the world, and across a range of different sectors from technology through entertainment industries to governments. Although that movement began firmly within the strategy domain with *Blue Ocean Strategy* (Chan Kim & Mauborgne, 2015), it always had a strong emphasis on action through its four action framework that was retained as they subsequently moved to Blue Ocean leadership. This chapter builds on this more recent leadership framework (Chan Kim & Mauborgne, 2014) as a vehicle for encouraging specific informed interventions. As well as keeping in touch with leadership developments – and leadership at many levels will be central to enacting these interventions – the framework has added utility in two ways: it leaves suggestive gaps for others to fill in (and so enables others to act in potentially strategic areas; and it presents informed

actions, which include dropping, or lessening, unproductive activities to undertaking incremental and innovative changes, in an easily comprehensible grid form.

To assist in understanding and applying these interventions, I have situated each within the Blue Ocean Leadership Four Action framework. This fits with Chan Kim and Mauborgne's (2014) rationale for using this theory to concentrate on the people resources of an organisation, to improve employer and employee engagement, redefine leadership practices and ultimately make a significant positive impact. All these elements have clear relevance to this project. Nor are the Blue Ocean theories restricted to organisations. The final chapter in Chan Kim and Mauborgne's (2017) book, *Blue Ocean Shift: Beyond Competing – Proven Steps to Inspire Confidence and Seize New Growth*, describes the use of Blue Ocean methodology to remake a nation's strategy by applying it to the transformation of the Malaysian g'vernment's prisons policy (pp. 277-291). So, while these interventions into Māori in IT do target some intra-organisational change, they also aim to involve, or deepen the involvement of communities, government policies, Iwi strategies, and the larger New Zealand culture.

Chan Kim and Mauborgne (2014) call the leadership version of the four-action framework the "leadership grid" shown in Table 10 below:

Table 10: Blue Ocean Leadership Grid

ELIMINATE	RAISE
What acts and activities do leaders invest their time and intelligence in that should be eliminated?	What acts and activities do leaders invest their time and intelligence in that should be raised well above their current level?
REDUCE	**CREATE**
What acts and activities do leaders invest their time and intelligence in that should be reduced well below their current level?	What acts and activities do leaders invest their time and intelligence in that they currently don't undertake?

This chapter situates each intervention into the most appropriate quadrant in the grid. The first group of interventions arise largely out of the interviews with research participants, and observations of Māori-related and technology-related conversations between digital kaitiaki. In a common recurring feature, participant after participant highlighted the importance of Māori leadership underpinned by Māori cultural values and practices. Whether they have read him or not, they all resonated with Katene's (2013) identification of the following three underlying themes of traditional leadership in Te Ao Māori:

1. He aha tēnei mea te rangatira? What makes a good leader?
2. Whanaungatanga (relationships) are important
3. The need for Te Rautaki a Māui (a Māui-like plan) (Diamond, 2003)

For the purposes of this thesis, however, the first set of interventions that follow are less directed at leadership. Instead, they are created as active initiatives designed to have direct positive impact on intended contemporary audiences. I have clustered them together under the heading "Māori Identity and Culture". The second group of interventions arises out of review and reflection on work already done, on conversations already held, and on projects undertaken in various roles. They come from part of my current employment responsibilities, my contribution, and that of others, to governance groups, and to individual and group activities as a Māori IT expert, business owner and researcher. In a direct line from Katene (2013) these interventions have a strong support and relationship focus and are categorised below under the heading "Responsibility and Role Models".

Māori Identity and Culture

On the first group of interventions, it was a reasonable expectation that some data from the participant interviews would be Māori identity and culture related. In the event, however, the participants highlighted areas that pointed to the need for significant interventions in three specific areas: 1) Māori governance and leadership; 2) Māori support and promotion; and 3) Māori digital career programmes. These will be dealt with in that order in the sections that follow below.

<u>A Māori governance and leadership programme</u>

This would seek to target emerging digital kaitiaki in order to increase their talent pathways. In effect it puts forward a Māori-values based leadership programme where digital kaitiaki learn how to advance into IT leadership roles and better prepare them for leadership and governance roles in general. This would assist growth in two ways: firstly, it will utilise Māori values and practices to empower digital kaitiaki more when using technology beyond mainstream groups for diverse groups in general, and Māori in particular; and secondly, it will connect Māori IT people with non-IT Māori management, leadership and governance. To give an idea of the need for the second, I consider a recent interview for a senior management appointment in a Māori organisation. The interview covered almost all the main areas of management but never mentioned IT or considered that the interviewees IT skills were particularly relevant.

While this is a new idea for Māori in IT, it is not a new idea. Almost 15 years ago, H. Mead, Stevens, Third, Jackson, and Pfeifer (2006) proposed a similar Māori governance programme that imbued Māori values and tikanga as key components for a culturally centric leadership programme. They discuss a review of functional areas of an organisation such as marketing, finance, operations and HR. This intervention also highlights values such as manaakitanga and kaitiakitanga and how they can be incorporated in the same areas including IT, as well as marketing (e.g., brand reputation and customer profiling); workforce management (e.g., staff and resources); sustainability (e.g., environmental and economic).

When applying the Blue Ocean Leadership grid, this intervention – while it may not rank as "a Māui-like plan" – can be considered a **CREATE** activity. This is because, while there are similar initiatives (e.g., Te Whare Hukahuka (2019), it is a specified new activity for areas of IT, especially in how it will address governance and leadership roles rather than narrowly technical upgrades. The intervention would look at current Māori leaders in IT to assist with the development of emerging Māori in IT, by providing leadership opportunities in various areas of IT (e.g., software development, project governance, team management). It would start inside existing organisations with Māori mentors encouraged to start a leadership type model to help more Māori into the industry and to progress upwards in the industry. This programme would be delivered

to specific Māori groups such as Māori women, Māori youth, Māori gamers, and software developers. To get this programme off the ground, funds and support would be sought from Māori organisations, IT organisations, and even government funding schemes that provide benefits to Māori communities.

Digital Taniwha Leadership

For Māori growth – in numbers, in leadership and in influence – this research, and experiences over time, suggest a new kind leadership is required. I would go further to name the specific leadership type for Māori IT professionals, or digital kaitiaki, as a "digital taniwha" leadership style. This newly evolved leadership style is founded upon my own experiences and those of the digital kaitiaki participants of this thesis. My own IT career experiences and current research journey have helped me express my written voice more strongly, assisting in the name of digital taniwha leadership.

My years of struggling to have Māori culture recognised in a non-Māori context was motivated from my family upbringing, exposure to Māori in (or not in) IT environments. In addition, it continues to be shaped by digital kaitiaki trying to find their space in an IT context. This tenacity of will, conviction of leadership, and passion for change from myself and other digital kaitiaki inspires a "taniwha-like" quality partly inspired by Katene's "Maui-like plan". A taniwha is a spiritual Māori creature typically inhabiting a water source such as a river, lake or the sea. It is either a protector or guardian, or a monster warding off humans (Keane, 2019). Stories of taniwha relating to sea voyages all take on a guardianship type role for travellers. In these tales, they help waka avoid obstacles or overcome challenges, and also provide signs of affirmation when a waka is on the right course. It is these characteristics that affiliate to a digital taniwha leadership style, and digital kaitiaki behaviour.

Reflecting on my own IT career experiences, I now acknowledge the previously unoccupied spaces I entered as a Māori IT professional, without knowing it. Leading and participating in decision-making activities that would later be seen as acting as a role model and demonstrating leadership accomplishments. One example is how I, and other digital kaitiaki, participate in Māori-focussed funding schemes established by the government, to provide high value jobs for Māori in the technology sector (Te Puni Kokiri, 2015). For too long, indeed since at least my experiences as an IT student,

there have been too many Pakeha-laden environments so that Māori are told what is good for them by others. By actively participating, and raising our voices for Māori, we improve the chances of changing that pattern.

Another example is setting up mentorship opportunities for up and coming digital kaitiaki to move into governance spaces. The aim is, by showing how important it was for them to shift from technical to leadership positions, to grow role models for the next generation of Māori following them. Other digital kaitiaki from this research have also shown leadership and guidance in their own Māori IT contexts. As Paraone expresses it:

> We want to help the youth but there's no exposure to Māori in IT. A bit of marketing is needed. There's a lot of people but I don't see none of that, that's why it's important for us to be here.

Before the prominence of the "Black Lives Matter" movement, Paraone identifies the importance of not just being a leader in IT, but how being seen as a Māori leader, especially to other Māori in IT, has important role model and organisational visibility dimensions.

It also has the underpinning of emotions, especially anger at injustice. In reviewing Boler and Archer's (2008) book, *The Politics of Prevention: A Global Crisis in Aids and Education,* Greer (2009) entitles her review "A Study in Intelligent Rage." Her phrase echoes Sir Tipene O'Regan's response, famous in Māoridom, "ask me about the nature of leadership in terms of what I've learnt, you've got to have a fire in your belly for an outcome" (O'Regan cited in Diamond, 2003, p. 41). Digital taniwha leadership encompasses components of various leadership styles mentioned in this chapter. A summary of the key attributes of this style are shown in Table 11.

Table 11: Digital Taniwha leadership attributes

Characteristic	Description of behaviour or attribute
Inspirational	Organic and charismatic leadership type behaviour
Protective/Supportive	Kaitiaki, guardian, mentor, role model, servant leader
Takes Action	Innovative, intelligent rage, risk taker, "Māui-like" planner
Transparent	Open and wayfinding leadership type behaviour

As part of taking action to implement these interventions, I will incorporate them as an additional service offering from my business – Digital Taniwha Ltd. I will also collaborate with other digital kaitiaki in my networks to promote these and/or similar interventions. My business provides expertise in IT strategy development and management practices. This governance and leadership programme will complement current services available to customers. Two key target audiences will be rangatahi and wahine Māori, as well as established organisations needing to develop their internal leadership programmes. As part of working with other digital kaitiaki, I meet with various kaitiaki online and in person at least every two months. At these meeting I will help co-design interventions where other kaitiaki can share their expertise and deliver value to intended Māori audiences. In addition, since my research found a strong focus on language and cultural connections as essential to increasing Māori and digital participation I recommend, and will support, or continue to support, the interventions in the sections that follow.

Support and promotion programmes

Topic specific - Digital Te Reo Māori projects

This intervention involves me in researching and identifying digital projects that I can promote or help with increasing the learning of Te Reo Māori. The rationale is that most of these projects are be Māori led and they would have engaged digital kaitiaki to assist in the technology aspects of the project. The project owners may be digital kaitiaki themselves and so this intervention would help identify other digital kaitiaki in New Zealand. For example, where people want to start a digital Te Reo project, I have network contacts to be able to connect language experts with digital developers to create products and services that promote the language.

For some time, scholars have been recognising the power of networks to the extent that Libert, Beck and Wind (2016) published a book entitled *The Network Imperative: How to Survive and Grow in the Age of Digital Business Models.* But increasingly, the recognition extends beyond computers and IT to the importance of networks socially and historically. As no less a figure than Eric Schmidt, the former CEO of Google, put it on the cover of a recent book *The Square and the Tower: Networks, Hierarchies and the Struggle for Global Power* (Ferguson, 2018): "Silicon Valley needed a history lesson and Ferguson has provided it." That the revised history is equally applicable to Māori can be seen in Ferguson's (2018) own analysis:

> Most history is hierarchical: it's about popes, presidents, and prime ministers. But what if that's simply because they create the historical archives? What if we are missing equally powerful but less visible networks . . . . Far from being novel, our era is the Second Networked Age, with the computer in the role of the printing press. Once we understand this, both the past, and the future, start to look very different indeed. (p. iv)

Māori in general, and especially Māori in IT, are well placed to understand this interweaving of past, present and future, and have long established cultural traditions that foster Māori networks. Moreover, having been on the wrong side of historical power as part of a colony, this thesis suggests that Māori and Māori in IT are also well placed to act to change that position in a future shaped more by, to use Ferguson's (2018) terms, networks than hierarchies.

For example, prior to this research, and continuing throughout it, I have established, and continue to grow, a substantial network that includes not just digital kaitiaki, but Māori working in education in different fields and institutions, members of Māori governance boards, Māori executives, and Māori business owners. My network credentials include being a member of the Institute of IT Professionals; an experienced senior IT Manager/Chief Information Officer; and a Māori IT professional on local and national governance and advisory groups. Part of this project involves tapping into this network and making links between those in different nodes to maintain, to increase, and, where possible, to initiate relevant activities. For example, my current occupation,

roles and responsibilities allow me to contact a variety of networks wider than just the IT sector. It stretches to other leaders who may not have IT expertise but have IT responsibilities and/or oversight. Many of the project owners I know already and for other, there's a good chance that I may know of someone who could introduce me to the project owners. I will begin such support and promotion at a social media level, a virtual networking approach through my current employment role and my personal business marketing channels. I would connect or link to the projects through my social media platforms, and then share to my networks. Where possible, in line with my experience, my findings and the literature on the preferred Māori values-based practice, I would meet with these digital kaitiaki, and others, in person – kanohi ki te kanohi – face to face.

I categorise this intervention in the **RAISE** quadrant of the leadership grid, with the possibility – since network theory suggests exponential unplanned change is possible (Kadushin, 2012; Rainie & Wellman, 2012) – of transforming into the **CREATE** quadrant. It is situated in the RAISE quadrant initially, since initiatives of this type have been attempted before with a focus, although not in technology, on increasing the learning of Te Reo Māori. Many have been successful, but they remain essential to develop in IT. As well as a strong focus on the language, this intervention would aim to increase the number of opportunities for Māori developers to own and drive these kinds of digital projects. Moreover, since the nature of the projects can be quite diverse, totally new types of projects could be developed, resulting in other **CREATE** type initiatives. While this intervention addresses a specific cultural component area such as language, the next takes a wider approach by targeting specific Māori societal groups. As these groups are key social groups within Māori culture, any meaningful engagement with Māori must engage with those groups.

Group-specific – Marae, hapū, whānau
In parallel with the topic-specific programme, research will continue into identifying specific digital Māori initiatives at marae, hapū and whānau levels. Already existing examples range from meetings using video conferencing, online recording of waiata (singing) practice, and tangihanga (funeral), through to the use of cloud-based and mobile application solutions to support marae activities. The rationale for this intervention is to understand Māori-driven IT projects that aim to positively impact core

Māori societal groups, who are key social clusters for Māori. By understanding why, they undertake digital projects in these contexts, the intervention will seek to understand how current and emerging digital kaitiaki can contribute more to these types of projects. Projects would range from software development to infrastructure projects such as marae Wi-Fi connectivity, tribal membership databases, and website and mobile applications to reach collective Māori groups as well as individuals. This follows Ratima, Brown, Garrett, and Wikaire's (2007) observation that "group and whānau-based models provide collective approaches for Māori success" (cited in Pihama et al. (2019, p. 58)

This intervention is assigned to the **CREATE** quadrant of the leadership grid because each engagement would be new within its specific contexts. No one marae, hapū or whānau is exactly the same and so the development of any intervention for those groups would be distinctively different if not unique. There may be similar terminology and overarching objectives, but each individual intervention will need to co-design its own particular objectives.

In my current position at a tribal college research facility, I am fortunate to have significant access to research networks and resources about marae, hapū and whānau. This coupled with my role as marae committee representative and hapū trust board chair, gives me confidence that my position can help in successfully implementing this intervention. The initial outcomes will be a marae and hapū database of technology-related needs for local marae. This database will then connect with other Māori companies who can meet these needs. To help with that connection, I am also well-positioned to assist in brokering the relationship using my cultural and IT expertise to communicate between the various parties including communication about group specific contexts (e.g., marae kaupapa and politics) and IT industry terminology (e.g., IT assessment, software development, infrastructure deployment and implementation).

The next two interventions shift to programmes that help Māori, especially young Māori, to open talent pathways by starting out on a digital career. They seek to connect Māori with the IT industry to give them a practical hands-on approach while they are completing their digital qualifications.

<u>Digital career programmes</u>

Digital Kaitiaki Cadetships – This programme would create a network of IT organisations willing to take on Māori cadets who are completing an IT qualification. This cadetship would be for the duration of the qualification and cadets will get hands-on experience working in a Māori-friendly IT environment. Since research suggests that cadetships are known for success and they could be productively adapted for Māori to get ahead in IT too (Te Puni Kokiri, 2011, 2019)

Digital Kaitiaki Internships – These would be similar to the cadetships but for shorter periods of time (e.g., four to twelve weeks). They would involve networking with education providers to discuss such initiatives as summer internships, where students can work on a project within an IT organisation

The digital kaitiaki cadetships and internships are categorised as **CREATE** and **RAISE** respectively in the leadership grid. Although it has been delivered in Australia (Digital Transformation Agency, 2019). such cadetships are a new intervention for Māori for the New Zealand IT industry. Other internship interventions have been delivered successfully in New Zealand before, and so this intervention researches what successes have been achieved in past internships and build upon those successes and lessons. In my role as a business owner and IT industry advisor to universities and institutes of technology, I will advocate for Māori cadetships and internships and attempt to develop these programmes in conjunction with those institutes and other industry partners. The interventions described so far are two-fold: firstly, they are designed to increase the importance and acknowledgment of Māori culture and identity; and secondly, informed by the participant interviews and subsequent conversations, they aspire to leverage the expertise and knowledge of digital kaitiaki.

The next set of interventions are informed by a series of reflections on work completed, lessons learned, conversations observed and conducted as part of my many roles. These include roles as a senior decision-maker in a tribal college, a business owner who provides industry advice to educational institutes, a member of various governance and advisory groups with a technology context, and an active tribal member in my marae and hapū.

Responsibility and Role Models

All interventions in this section will be implemented using my current business – Digital Taniwha Ltd, and/or through the establishment of a social enterprise entity that will be described in more detail later in this section.

Digital kaitiaki networking forums

This will involve building networks, supporting and advocating for specific forums that focus on digital kaitiaki, with particular regard to wahine Māori and rangatahi Māori. The delivery methods will continue to be online and/or physical forums and will be utilised to identify emerging and current Māori leaders in IT. Whether at strategic or operational levels, Māori and non-Māori know that supporting drivers for change benefits all ICT communities (Keegan & Sciascia, 2018; Ministry of Business Innovation & Employment, 2017). Strategic approaches will involve bringing together leaders from the Māori IT space for global discussions underpinned by regional and local successes. Operational approaches will be specifically designed to involve regional-based targeted interventions for Māori rangatahi, women, and start-up businesses. As with many Māori and action research initiatives, this is designed as a more "hands-on, at the coal-face" approach. Culturally aligned methods would be in the form of "wānanga" style forums to encourage people into ICT or showcase the benefits of ICT for community benefit (e.g., possible employment opportunities).

Reward and recognition programme

This intervention involves advocating for and supporting, such Māori-specific recognition platforms as awards, scholarships, and industry marketing. The overall strategy is to highlight digital kaitiaki, increase visibility of the established Māori IT industry, and give space to Māori IT role models. Support for emerging digital kaitiaki would entail wider public promotion and acknowledgement of these kaitiaki. An example is through my current occupation where I am referring or promoting digital kaitiaki to fellow professional colleagues. I have been fortunate to make numerous referrals over the last few years. Another example is how this thesis contributes is by highlighting the existing digital kaitiaki who have been active and passive participants, by getting them to meet in different formal and informal for a, and by raising awareness of the presence of this Māori societal grouping. The sharing of skills and expertise of

digital kaitiaki amongst whānau, personal and community networks is important to the industry. This means not just increasing the visibility of existing practitioners but also encouraging burgeoning digital kaitiaki from generation Z (the most recent), on platforms where these generations are most familiar with – social media (Keegan et al., 2015; O'Carroll, 2013a).

Industry support services

This intervention aspires to help emerging digital kaitiaki (wahine Māori and rangatahi Māori) with starting an IT/technology-related business. This may include facilitating finance and marketing workshops for local, national and international markets. Finance workshops would involve understanding funding services available for Māori SME's, or Māori digital projects and either promoting awareness of these or providing an assistance programme to assist inexperienced digital kaitiaki with their funding applications. Also, to help maintain a kaupapa Māori learning style for my workshop attendees, I would, as much as possible, conduct these workshops in a "wānanga" style delivered at marae. The wānanga allows the learner to absorb the information in multiple ways and assist in all forms of learning styles (e.g., visual, kinaesthetic, audio, written). The rationale for this intervention is that there are many types of funding schemes available to small business and/or technology-related projects, but the application process can be difficult so that it leads to insufficient applicants and then too many unsuccessful applications, especially since Māori are already educationally disadvantaged. This intervention aims to increase Māori applicants, and to give digital kaitiaki an improved chance of success.

Tuakana/Teina model

Another intervention born out of reflection, is a support and mentoring model for emerging digital kaitiaki. This identifies experienced digital kaitiaki as available to provide mentoring advice to new digital kaitiaki. It will feature such activities as a facilitated series of seminars where the experienced digital kaitiaki share knowledge and exchange business opportunities with wāhine Māori and rangatahi. Barnett and Wiata (2017, p. 16) state that a mentoring model of this type, "can be of significant value to mentors and mentees...if implemented in a culturally appropriate manner" (p. 16). I will develop this model through my connections to other Māori academics and researcher, many of whom I can access through my role at the tribal college and my

connections at the University of Waikato. The model development will be open to partnering with other institutions if it has the potential to obtain greater access to potential Māori participants. Like the support services model, I would deliver workshops in the form of wānanga either at marae or at clients' premises. Some of these workshops could be eligible for external funding, and so the social enterprise entity could contribute an important factor in this intervention.

Further research into wāhine Māori and rangatahi Māori

This concentrates on active promotion and support further research into wāhine Māori and rangatahi Māori digital kaitiaki. I would propose co-writing and publicising a research article (or articles) in these areas to alleviate the dearth of current and relevant literature. Examples could include assisting with graduate students (Masters or PhD, Post-doctoral) and academics in these new articles. The rationale to research these specific groups is to address the under-representation of them in the IT industry as identified by other research, and the call for this research within existing digital kaitiaki networks. This thesis emphasised the need for more wahine Māori research because of the limited number of wahine Māori participants, however, at this point, I acknowledge that there is much more active wahine Māori digital kaitiaki since beginning the research journey.

A social enterprise

This intervention emerged from reflecting on this research and continual engagement with digital kaitiaki over the course of the doctorate. Online discussions consistently ask for information of who are Māori digital experts and leaders for various research and project opportunities, and where can they be found. This social enterprise would be to turn and expand an already existing community of practice to a more institutional structured organisation capable of maintaining a database of digital kaitiaki showing area of expertise, location, region and, possibly, tribal affiliations. It would also have the capacity to deliver the workshops and services recommended earlier in this chapter as well as conducting the further research required and the promotion of digital kaitiaki and links to industry networks both nationally and internationally. This would be setup by a small group of existing digital kaitiaki and funded by sources such as the IT industry, other interest groups (e.g., science and technology groups), and government funding schemes.

The interventions above have been categorised into the RAISE and CREATE sections of the leadership grid – see Table 12. The RAISE categories will build upon what is already being done, and any new outcomes from those, will be developed into CREATE interventions. For those already in CREATE, there may be similar projects however these will be significantly different because of the varying contexts when applied to Māori audiences.

Table 12: Interventions mapped to the Blue Ocean Leadership grid

INTERVENTION GROUP	ELIMINATE What acts and activities do leaders invest their time and intelligence in that should be eliminated?	RAISE What acts and activities do leaders invest their time and intelligence in that should be raised well above their current level.	REDUCE What acts and activities do leaders invest their time and intelligence in that should be reduced well below their current level?	CREATE What acts and activities do leaders invest their time and intelligence in that they currently don't undertake?
MĀORI IDENTITY AND CULTURE		Digital Te Reo Māori projects		Māori governance and leadership
				Group-specific – Marae, hapū, whānau projects
		Digital Kaitiaki Internships		Digital Kaitiaki Cadetships
RESPONSIBILITY & ROLE MODELS		Digital Kaitiaki Networking Forum		Industry support services
		Reward and recognition programme		Tuakana/Teina model
		Further research into wāhine Māori and rangatahi Māori		A social enterprise

Te Rautaki o Māui

While the Blue Ocean Leadership grid gives an initial grounding of how interventions can be categorised in an established western-developed model, it is appropriate that

this research proposes a current Māori-centric model. This research proposes a model based that extends upon the Te Rautaki a Māui (The Strategies of Māui) as noted by H. Mead et al. (2006). Technology is such an integral part of life and society that this "Māui-like" model is more relevant today than ever (Diamond, 2003).

Māui, is a well-known demigod referenced in Māori mythology but similarly in Polynesian mythology across many islands within Polynesia (Reed, 2004). Māui's actions show him as a culturally grounded risk-taker, entrepreneur, innovator and leader. These qualities continue to be needed to inform and inspire the leadership and action-based interventions that will grow Māori participation in IT.

CHAPTER NINE: COMING TO LAND

Wāhanga Tuaiwa: Te Mutunga o te Haerenga

At the outset of this thesis journey, I recounted my experience of becoming the last remaining Māori in my IT Studies graduation class. That situation catalysed many of my activities since then and led me to where I am today and this final chapter. The first inspiration from my whānau and early education experiences through to my present-day Māori-centred IT professional career. Chapter one highlights the genesis of my research voice and inquiry, both partly motivated and shaped by dissatisfaction with the visible inequalities between Māori and non-Māori IT environments recorded in subsequent chapters. It outlines the shape of a rapidly expanding IT industry in New Zealand and internationally and argues that Māori have a larger contribution to make to both of those contexts. However, the Māori IT professionals that I knew to be out there, were not regularly seen at mainstream IT events and forums, and this is where my research question – where were they? – increased in intensity supported by the associated question: why weren't they coming to these events?

The question bit deeper since, as a Māori IT professional myself, I knew that a Māori worldview would benefit a virtually non-Māori industry such as IT. That worldview, grounded in cultural values that embraced and promoted innovation and creativity, had obvious relevance to the industry's needs. However, I needed to fine tune my research position, what I was trying to discover, and how best to do that using a Māori-centric approach. Accordingly, this chapter continues adapting ocean metaphors to help depict the research journey and indicate the post-thesis journeys to come.

The next two chapters engage with two Māori research approaches. Chapter two, "A Journey Beyond the Literature Review (Wāhanga Tuarua: Ka Titiro Ki Muri, Ka Haere Ki Mua)" deals with Spiller et al.'s (2015) *Wayfinding* as a new way of looking at research from a Māori and indigenous worldview. Chapter three, "Wayfinding with Kaupapa Māori (Wāhanga Tuatoru: Whakariterite Te Waka)" takes on board Kaupapa Māori (G Smith, 1997) as key to this thesis through the ways in which it legitimises key tenets of Māori values and practice (such as Te Reo Māori) in research writing. Due to the scarcity of literature in this area, the Kaupapa Māori

approach enabled the portrayal of research components and engagement in a culturally safe way for both researcher and participants. The wayfinding approach allowed components to be interpreted with the ocean metaphor so popular among peoples of the Pacific.

The thesis identified the qualitative research methods of action research and appreciative inquiry as complementary to Kaupapa Māori methods, and so this research employed semi-structured interviews, focus groups and field observations, albeit adapted to meet the cultural appropriateness for research participants. These adaptions that meant interviews were more of a conversational type than formal questioning. Chapter two introduced the key thesis term "digital kaitiaki" to reference Māori IT professionals.

Chapter four then detailed participant selection and outlined the data collection process. The NVivo data analysis software is used to compile interview data and group narratives, which is then thematised into four categories: 1) Māori identity, 2) Taking responsibility, 3) Motivation, and 4) Role models. These initial themes are further analysed by looking at the impact of a participant's generation and possible influences from their whānau upbringing, as well as surfacing consistent emerging narratives from the focus groups and observations. Chapter five follows on by solidifying these themes and distinguishing supportive influences to help increase the number of digital kaitiaki in the IT sector. It outlines factors underlined by cultural values, to promote what works well and what could be done better to increase Māori participation in IT. This chapter also provides preliminary recommendations for action-based interventions in numerous approaches, to address this thesis's research questions in a positive way.

Chapter six acknowledged the study's debt to previous Māori models and frameworks used for other industries before building on them to introduce a culturally aligned model – He Waka Kaitiaki Matihiko (the Digital Taniwha Waka) – specifically for the Māori and IT sector. This model uses the waka imagery in support of the ocean metaphor that was identified earlier in the thesis and known by many Māori. The chapter investigated the waka and its components to illustrate what a culturally supported vehicle for Māori worldview engagement can offer for a digital kaitiaki

traversing the IT world. This chapter also highlighted influencing factors on the waka within a Māori context, such as reference to ocean elements (e.g., moutere = islands) from a Māori perspective.

Chapter seven tackles the challenge of effective leadership in the IT industry. It places this in the context of leadership styles of the past, with a view to recognising what leadership is needed for and by digital kaitiaki to meet the opportunities and challenges their waka may meet. It compares and contrasts general leadership literature with Māori leadership styles from before and after the arrival of Europeans to New Zealand. Acknowledging how leadership styles have changed over the years due to social, economic and political influences, this chapter evolves a newly-minted leadership style particularly for digital kaitiaki in the IT world. This style, named "Digital Taniwha Leadership", is grounded in cultural values, and combines the attributes of a protective, guardian-like behaviour with the determination, passion and tenacity to achieve and succeed. Chapter seven puts this leadership style forward as fit for purpose in carrying out the interventions proposed in the next chapter.

Chapter eight is the culmination of the data collection, analysis and findings by translating them into a series of actions for positive change. The interventions focus first and foremost on addressing the themes, key interview data and narratives gathered from the research participants. The interventions range from governance and leadership programmes, through talent and career pathways, digital kaitiaki networking and support initiatives, increasing diversity representation (e.g. women and youth), to business models that provide a framework to support the proposed interventions. The thesis provides actionable and achievable interventions that addresses its core purpose – growing Māori participation in the IT industry. It expands upon this by incorporating the valid Māori worldview and aligning with approaches that benefit both the digital kaitiaki and wider IT industry. Their personal and professional lives of digital kaitiaki are enhanced to enable them to enter this typically non-Māori world, to travel in it with confidence, and take appropriate leader positions within it. Finally, it has to be acknowledged that, while this academic waka journey has reached its shore, it is only the beginning for the next digital kaitiaki to navigate with this map of interventions and, no doubt, to plot the course of their own waka to their own destinations.

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Appendices

Appendix A: Information Sheet - Semi-structured interviews & Focus groups

Purpose	Growing Māori participation in the ICT industry. The identification of key factors that influence Māori to participate in ICT			
Who is associated with the research?	**Researcher**	**Supervisors**		
	Warren Williams 022-172-9694 warren.williams09@gmail.com	Associate Professor Peter Sun Waikato Management School The University of Waikato Private Bag 3105 Hamilton 3240 petersun@waikato.ac.nz 07 838 4283	Professor David McKie Waikato Management School The University of Waikato Private Bag 3105 Hamilton 3240 dmckie@waikato.ac.nz 07 838 4197	Dr Koro Ngapo Faculty of Education The University of Waikato Private Bag 3105 Hamilton 3240 ngapok@waikato.ac.nz 07 838 7958
What's involved?	Participants will be invited to meet at a suitable time and place to participate in a 1-2 hour interview.			
What will happen to material collected	- All of the information and materials produced in the course of this research will be handled in a confidential manner. Interviews will be recorded on a digital recorder. All digital files will be labelled (using a pseudonym) and stored in the researchers computer that will be password protected. All hard copy information will be stored in a file cabinet in a secure environment at the researcher's home address. - Only the researcher and research supervisors will have access to the research information. - Original research information will be destroyed six months after submission of the formal research thesis to the University of Waikato. - The research will form the basis of a formal PHD thesis. - Anonymous extracts of the thesis may be used in associated publications such as conference proceedings and journal articles. It is important to note that individuals and their responses cannot be identified within the formal thesis as pseudonyms will be used.			
Risks	Due to the non-invasive and simplistic design of the research, no potential risk to participants is anticipated. However, the researcher, who will protect the data collection, analysis and reporting process, will mitigate any potential risk.			
How to opt out	Research participants can discontinue or defer their involvement at any point if they feel uncomfortable. Participants also have the ability to withdraw from the research prior to the final thesis having been prepared on 31 January 2017.			
How to get more information	More information can be obtained by contacting either the researcher or supervisors (refer to contact details above).			

Appendix B: Information Sheet – Participatory Action Research

Purpose	Growing Māori participation in the ICT industry. The identification of key factors that influence Māori to participate in ICT

Who is associated with the research?	**Researcher**		**Supervisors**	
	Warren Williams 022-172-9694 <u>warren.williams09 @gmail.com</u>	Professor David McKie Waikato Management School The University of Waikato Private Bag 3105 Hamilton 3240 <u>dmckie@waikato.ac.nz</u> 07 838 4197	Associate Professor Peter Sun Waikato Management School The University of Waikato Private Bag 3105 Hamilton 3240 <u>petersun@waikato.ac.nz</u> 07 838 4283	Dr Koro Ngapo Faculty of Education The University of Waikato Private Bag 3105 Hamilton 3240 <u>ngapok@waikato. ac.nz</u> 07 838 7958

What's involved?	The researcher and focus group participants will form a 'whānau of interest'. This group will collaboratively develop and implement a small number of interventions designed to increase Māori partipication in the ICT industry. The interventions will be implemented, evaluated, redesigned (if necessary) and re-implemented. Decisions about where, what and when to implement will be decided collectively by the whānau of interest. The whānau will also decide who will implement these interventions.

What will happen to material collected	- All of the information and materials produced in the course of this research will be handled in a confidential manner. Group discussions will be recorded on a digital recorder. Consent will be obtained from participants prior to discussions. All digital files will be labelled (using a pseudonym) and stored in the researchers computer that will be password protected. All hard copy information will be stored in a file cabinet in a secure environment at the researcher's home address. - Only the researcher and research supervisors will have access to the research information. - Original research information will be destroyed six months after submission of the formal research thesis to the University of Waikato. - The research will form the basis of a formal PHD thesis. - Anonymous extracts of the thesis may be used in associated publications such as conference proceedings and journal articles. It is important to note that individuals and their responses cannot be identified within the formal thesis as pseudonyms will be used.

Risks	Due to the non-invasive and simplistic design of the research, no potential risk to participants is anticipated. However, the researcher, who will protect the data collection, analysis and reporting process, will mitigate any potential risk.

How to opt out	Research participants can discontinue or defer their involvement at any point if they feel uncomfortable. Participants also have the ability to withdraw from the research prior to the final thesis having been prepared on 31 January 2017.

How to get more information	More information can be obtained by contacting either the researcher or supervisors (refer to contact details above).

Digital taniwha: Growing Māori participation in the ICT industry

I have read the **Information Sheet** for this study and have had the details of the study explained to me. My questions about the study have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I understand that I can decline to answer any particular question in the study.

I understand that I am free to withdraw from the study up until 31 January 2017.

I agree to the use of anonymous extracts in the thesis and in associated publications such as conference proceedings and journal articles.

I agree to provide information to the researchers under the conditions of confidentiality set out on the **Information Sheet**.

I agree to participate in this study under the conditions set out in the **Information Sheet**.

Signed: _____

Name: _____

Date: _____

Researcher's Name and contact information:

Warren Williams
022-172-9694
warren.williams09@gmail.com

Supervisor's Name and contact information:

Professor David McKie	Associate Professor Peter Sun	Dr Koro Ngapo
Waikato Management School	Waikato Management School	Faculty of Education
The University of Waikato	The University of Waikato	The University of Waikato
Private Bag 3105	Private Bag 3105	Private Bag 3105
Hamilton 3240	Hamilton 3240	Hamilton 3240
dmckie@waikato.ac.nz	petersun@waikato.ac.nz	ngapok@waikato.ac.nz
07 838 4197	07 838 4283	07 838 7958

Gender: ☐ Male   ☐ Female

Age:

☐ 20 – 24 years old   ☐ 45 - 49 years old

☐ 25 - 29 years old   ☐ 50 - 54 years old

☐ 30 - 34 years old   ☐ 55 - 59 years old

☐ 35 - 39 years old   ☐ 60 - 64 years old

☐ 40 - 44 years old   ☐ 65+ years old

Marital Status

☐   Single   ☐   Married

☐   Living with partner/spouse   ☐   Divorced

☐   Separated   ☐   Widowed

Iwi Affiliation(s): _____

Hapū Affiliation(s): _____

Job Title / Profession:_____

Industry/Sector of Employer:_____

Number of years in current position: _____

Number of years in service: _____

Appendix E: Interview Prompts

Digital Taniwha: Growing Māori participation in the ICT industry

1. In your opinion, what do Māori do well in the ICT industry?
2. Similarly, what does the ICT industry do well for Māori?
3. Can you describe, what encourages Māori participation in the ICT industry?
4. What motivates you to do the work you are doing now?
5. Can you tell me a bit about your strengths in the industry?
6. What are some sources of pride for you in the ICT industry?
7. What are your experiences regarding Māori culture, principles and values and the ICT industry?
8. What encourages you to participate in the ICT industry?
9. If you were to imagine the future of the ICT industry, what would you want Māori participation to look like in this industry?
10. Are there any comments or questions you have for me? Is there anything you would like me to explain? What would you like to tell me that you've thought about during this interview?