

An Exploration of Digital Technology for Cultural Preservation in Tonga

‘Anau Mesui

A dissertation submitted to
Auckland University of Technology
in partial fulfilment of the requirements for the degree
of
Master of Business (MBus)

2019

Department of Business Information Systems
Faculty of Business, Economics and Law

Abstract

Cultural heritage is the legacy of our ancestors, connects us with our ancestral roots and shapes the way we live today. A society's heritage serves an essential purpose for educating people about their own culture and aiding in understanding their traditional values. However, due to the pressures of globalisation, migration and technological advancement, Tonga's cultural heritage is threatened. These threats can potentially impede the transferring of societies' idiosyncratic identity to future generations and erode cultural life.

As a result of external pressures, societies have started to use digital technologies to preserve their historical artefacts. In the case of Tonga, the infiltration of information and communications technology (ICT) devices means that local Tongans readily have the option to utilise ICT as an easily accessible method for preservation. However, whether this is occurring and how this is transpiring is something I explored. Considering the importance of safeguarding Tonga's cultural roots, there is a lack of research that investigates the role of digital technologies in this process. As a result, this study seeks to undertake an exploration of digital technology for cultural preservation in Tonga.

For the purpose of understanding the research topic, the following question was asked: "how is digital technology utilised in the process of preserving cultural heritage in Tonga?" Accordingly, the perspectives and experiences of Tongans residing in Tongatapu are considered in a case study methodology underpinned by interpretivism. Additionally, face-to-face sessions were undertaken with twelve participants in a formal and casual *talanoa*. Eight of the individuals who participated in the *talanoa* belong to one of the following five groups: Heritage support group, an advocacy group, government agent(s), royal heritage agent and a community-based interest group. These groups identified as either using ICT to preserve cultural heritage or were prominently engaged in protecting or practising cultural heritage.

Also, a thematic analysis was employed to identify factors relative to the research context. From this analysis three findings were identified: Perceptions of cultural heritage and preservation, existing challenges that affect the preservation of cultural heritage in Tonga, and bottom-up initiatives for preservation. These key findings indicate that Tonga's cultural heritage is important and valued by its local citizens. However, there are current challenges that affect the preservation of Tonga's cultural artefacts such as, a lack of support from leadership. Given these challenges, local Tongans are engaging in bottom-up initiatives as a means of preserving their cultural heritage.

Keywords: Cultural Heritage, Preservation of Cultural Heritage, Social Embeddedness, Information and Communications Technology

Table of Contents

Abstract.....	I
List of Figures	V
List of Tables	VI
Attestation of Authorship.....	VII
Dedication	VIII
Acknowledgements.....	IX
 Chapter 1: Introduction	 1
Chapter 2: Literature Review	6
2.1: Cultural Heritage.....	6
2.1.1 Cultural Heritage in the Pacific Islands	6
2.1.2 Preserving Cultural Heritage in the Pacific Islands	8
2.2: Information and Communications Technology	9
2.2.1: Information and Communications Technology in Developing Countries	9
2.2.2: Information and Communications Technology in Tonga.....	10
2.3: A Social Embeddedness Approach.....	10
2.3.1: An Explanation of Social Embeddedness	11
2.3.2: Social Embeddedness Applications	11
2.3.3: Social Embeddedness: The Selected Lens.....	12
2.4: Summary	15
Chapter 3: Methodology.....	16
3.2: Philosophical Underpinnings	16
3.3: An Overview of the Case Study.....	17
3.4: Research Design.....	18
3.5: Unit of Analysis	19
3.6: Data Collection	21
3.7: Data Analysis	24
Chapter 4: Findings	27
4.1: Perceptions of Cultural Heritage and Preservation	27
4.1.1: Cultural Heritage as a Whole.....	27
4.1.2: Traditional Method are Valuable	29
4.1.3: Cultural Heritage is Important to Preserve	30
4.1.4: ICT is an Option to Preserve Cultural Heritage.....	31
4.2: Existing Challenges that Affect the Preservation of Cultural Heritage	33
4.2.1: Lack of ICT Leadership and Direction	33

4.2.2: Limited Knowledge of Existing ICT Policy	35
4.2.3: Lack of Funding.....	36
4.3: Bottom-up Initiatives for Preservation.....	37
4.4: Summary	39
Chapter 5: Discussion	40
5.2: Culture Influences the Use of ICT	40
5.2.2: The Implication of Culture Influencing ICT: Preservation is a Fusion of Traditional and Modern Methods	41
5.3: Challenges in Using ICT for Preserving Cultural Heritage are Prevalent	43
5.3.1: The Potential of ICT Use is Prevented by Challenges not Unique to Tonga.....	43
5.3.2: ICT is Perceived by Local Actors as not a Priority for Leaders	44
5.4: Emerging Initiatives in Tonga.....	45
5.4.2: The Act of Preservation is More Important than the Methods and Processes of Preservations	46
5.4.3: IS Innovation is Occurring in Bottom-up Initiatives	47
5.5: Summary	48
Chapter 6: Conclusion	50
References	51
Glossary	56
Appendices	
APPENDIX ONE: Ethics Approval.....	57
APPENDIX TWO: Participant Information Sheet.....	58
APPENDIX THREE: Interview Guide.....	61
APPENDIX FOUR: Consent Form	63
APPENDIX FIVE: Transcriber Confidentiality Agreement.....	66
APPENDIX SIX: Conference Attended during Masters' Study.....	67

List of Figures

Figure 4.1: Holistic View on Cultural Heritage.....	29
---	----

List of Tables

Table 3.1: Participant Demographics.....	20
Table 3.2: Outline of the Groups	20
Table 3.3: Initial Coding.....	24
Table 3.4: Thematic Table	26
Table 3.5: Example of Sub-themes and Themes.....	26
Table 4.1: Coding of Perceptions of Cultural Heritage and Digital Technology	27
Table 4.2: Coding of Existing Challenges that Affect the Preservation of Cultural Heritage	33
Table 4.3: Coding of Bottom-up Initiatives for Preserving Cultural Heritage	37

Attestation of Authorship

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

Date: June 6th, 2019

Dedication

To my ancestors who have paved the path I stand on, to my family presently navigating their path, and to my future family members who are yet to add to the path.

Koe ‘Otua mo Tonga ko hoku tofi’a.

Acknowledgements

I would like to first acknowledge Jehovah Jireh, Yahweh, El Elyon my trusted friend, Jesus and the Holy Spirit, Three in One. We have been through many seasons of life together, and through thick and thin you reminded me of my purpose, my worth and my salvation. I would not be where I am in life if it weren't for you, my heart knows this too well. You have renewed in me a new spirit and redefined life with a new set of lenses that forgives, loves and laughs.

I would like to acknowledge my supervisors, Associate Professor Antonio Diaz Andrade and Dr Lena Waizenegger. I am grateful for your expertise, feedback, patience and guidance throughout this writing journey. I have learnt considerably from the both of you and I am grateful for the experience that I was fortunate enough to have at the 15th International Conference on Social Implications of Computers in Developing Countries. Thank you for continuing to push me and working with me to refine my writing.

I extend my warmest regards to all the participants who engaged with me in the *talanoa* sessions, malo 'aupito. I am in debt to you all for sharing your time and wisdom with me. 'Oku tala 'e tau Tonga 'ihe tau 'ofa kainga, pea ko ia oku 'ou tuku atu ha faka'malo mo lotu hounga 'ia kihe tokoni kotoa pe na'e foaki mai ki he kii fefine tu'ani. Malo 'a e fie tokoni ke lava 'a e ki'i feinga nau taumu'a ki ai. 'Ofa atu moe lotu kia ki moutolu hono kotoa.

To my parents Sione 'Atia'i and Neanisi Mesui there are not enough words to express my gratitude. 'Oku ikai 'i ai ha lea feunga keu faka'malo atu kia moua he mo 'ofa mo tauhi ne fai ki he eku moui. Koe puipui tu'a nau tupu hake 'i 'ai moe akonaki ne mo fai ki he eku moui 'e ikai ngalo 'iate 'au. 'E ikai ngalo ho mo ngaahi feinga kotoa pe keu 'a u ki he tuunga ako ko eni. Pea koe ki'i me'a 'ofa si'i si'i 'aupito pe eni kou foaki atu ma'a moua, he ko mo 'ofa 'oku 'ikai ke 'i ai ha ane tata'u. Malo ho mo si'I sio loloa keu tu'uta 'ihe kelekele 'eikini ko Aotearoa. Oku 'ou 'ofa lahi atu kia moua pea kou lotu pe ke tapuakina ma'u pe moua 'ihe 'Otua 'oe 'otu langi, pea ne foaki atu 'ae moui lelei, fuoloa, mo kelesia 'ia. 'Ofa lahi atu.

Kou 'ofa atu to my siblings, Mele Tonga, 'Anamanuhina, 'Atelete Hifoileva, Manase Kaho, Tony Oxmond, Tangifetaua. 'Oku 'ou faka'malo atu kia moua tolu 'ihe ngaahi tauhi ne fai mai ki he eku moui he eku kei si'I mou poupu lelei.

To my patient husband Todd Henry, thank you for being the amazing person that you are. Thank you for your support, for the cups of coffee and for always treating me with love and respect despite how busy life can get. I would have not made it through this journey had I not had you beside me. Let's keep dreaming and encouraging one another to live our best lives. 'Ofa lahi atu kia koe 'ofa'anga.

To my sweet fanau Ngata Tonga Mata-Moana and ‘Ileini ‘Anaukihesina Henry, I love you two always. You two are the joys in my world, the light in dark days and the motivation that drives me to pursue life everyday. Dream BIG, dream always, and redefine life according to your drum beat and no one else’s. This one is for you both.

To my dearest best friend Jessica Ng Wun, your friendship I will always value. You are my sister and I have learnt so many wonderful things about life from you. Through the dark valleys of life, you are always there with a smile. Psalm 139:14.

I would like to specially mention here the Mai-ki-Aronui group. Thank you so much for providing a safe, welcoming and encouraging environment for Maori, Pacific and all indigenous post-graduate students to belong to.

I would like to say thank you to my Equippers family for all your prayers, support and encouragement, a big malo ‘aupito, ‘ofa atu. Also, thank you to Silia Kalaniuvalu for the history lessons and sharing your knowledge, Edmund Fehoko for reading my study and to Priti for providing support during this journey.

To my friends from all corners of life, thank you for being beautiful lights in my world. It takes a community of beautiful humans to achieve ones dream, and you are all special to me and in all that I do, thank you for the privilege of friendship. I am blessed.

This study was approved by the Auckland University of Technology Ethics Committee (AUTEC) on the 13th September 2018, AUTEC approval number 18/330.

Chapter 1: Introduction

Cultural heritage carries the stories and values of our ancestors that define and assist in our understanding of who we are today (Silverman & Ruggles, 2007). Cultural heritage can be divided into two types: tangible artefacts such as historical monuments and archaeological sites (UNESCO, 2011) that provide physical evidence of a society's traditional stories, and historical accounts. Such accounts also exist in elements of intangible artefacts which could include religious ceremonies, and oral history (UNESCO, 2011). For example, in Tonga some elements of its cultural heritage exists in traditional art which fall under three categories: *faiva* (performance arts), *tufunga* (material arts) and *nimamea'a* (fine arts) (Māhina, 2008) constituting as tangible and intangible heritage.

In Tonga, where this research study is focused, oral traditions have maintained the sea navigation skills and astronomy that have asserted Tonga's maritime chiefdom for over 2000 years (Clark, Burley, & Murray, 2008). However, this ancient navigation knowledge is now at risk of being eroded due to technological advancement, migration, and globalisation. For instance, older methods of navigating are being replaced by new forms of sailing methods, like electrical motors and global positioning systems (GPS). Also, as Tongans' migrate to foreign nations to seek opportunity, there are new ways of living being adopted which are replacing the seafaring lifestyle. These risks are just a couple of examples that illustrate the threats to Tonga's cultural heritage. Therefore, preserving Tonga's cultural artefacts is important to provide an understanding of the Tongan peoples, their culture that includes their rich history of traditional navigators and complex stratified systems of relationship (Kaepler, 1971) into the future. It is imperative to pass on traditional knowledge and stories to future generations in order to prolong and maintain the Tongan cultural identity and worldviews.

Currently, across Oceania, nations such as Fiji are utilising ICT to create a virtual museum that supports the safeguarding of cultural artefacts making it accessible to the community (Fiji Museum, 2018). Fiji's virtual museum has audio narrations, a zoom function, and descriptions of artefacts, such as Lapita pottery and even traditional Tongan weapons (Fiji Museum, 2018). Fiji is an example of how ICT can play a role in maintaining cultural knowledge and extending its longevity for the generations to come. To improve our understanding of the potential of ICT for the preservation of cultural heritage in Tonga, I am motivated to understand: How is digital technology utilised in the process of preserving cultural heritage in Tonga?

Many societies around the world have realised the importance of preserving their idiosyncratic history and adopting technology as an option to preserve heritage in various ways. Tonga is no different, and an exploration of this geographical area is necessary to gain an understanding of the information and communications technology (ICT) phenomenon and its role in preserving heritage. This study is imperative due to the limited research conducted on Tonga regarding

understanding how ICT is utilised to preserve cultural artefacts. Whilst research is available that provides information on how ICT is used by Tonga's neighbouring countries, Fiji and Samoa, Tonga as a case study is partially unexplored in the information systems field. Therefore, this study seeks to provide an understanding of the digital technology phenomenon in Tonga and from the perspectives of the local Tongan peoples in their local setting.

The digital technology phenomenon has had a social impact on societies like an increased awareness amongst its peoples to utilise ICT for preservation efforts. As a result, societies and individuals are adopting ICT as an option to safeguard tangible and intangible cultural artefacts. The elevated awareness around preservation promotes the importance of cultural heritage especially among members of the younger generations and foreign societies. Currently, 54.4% of the global population use the internet and internet-based applications (Internet worlds statistics, 2018) to search for information and as a means of communication. In the Oceania/Australia region from the year 2000 to 2018, the percentage of internet users has increased by 263% (Internet worlds statistics, 2018). The Oceania/Australia region covers the South Pacific Islands, New Zealand and Australia.

In Tonga with a population of 109,008 inhabitants, there were 57,822 Internet users and 54,000 Facebook users as of December 2017 (Internet worlds statistics, 2018), this is almost half of the population of Tonga utilising Facebook. Certainly, Facebook is a popular social media platform that is an internet-based application. An example of Facebook's popularity is the Fale 'a matapule page that has 14,677 members, who are active and engaged in disseminating Tongan knowledge and heritage (Fale 'a Matapule, 2015). Knowledge includes historical images of the Royal family, village historical stories, and information regarding cultural protocols. Therefore, the internet and internet-based applications have great potential to preserve cultural heritage and to promote the ancestral roots of our society. As a result, they are contributing to the continuance of cultural heritage for generations to come.

Nevertheless, in organisations across Tonga, the use of ICT for preservation purposes is potentially limited in comparison to its Oceanic neighbours, Fiji and Samoa, who have recognised the potential of ICT to not only safeguard their heritage but also to disseminate it. For Tonga, this limitation is connected to the influence that culture has on digital technology which the local people accommodate. Culture in the context of this study includes behavioural norms, shared values, customs and beliefs and traditional knowledge and cultural expressions both intangible and tangible (Talakai, 2015). In Tonga, cultural constructs can modify individuals' behaviours and ways of acting in the workplace and therefore, impact how ICT is utilised to preserve cultural heritage. For example, the *fa kavei koula* (four golden pillars): *loto to* (humility); *faka'apa'apa* (respect), *mamahi'i me'a* (commitment) and *tauhi vā* (reciprocity and maintaining of relationships) are principles (Tu'ivakano, Fusitu'a, Taufe'ulungaki, Havea & 'Ilaiu, 2016) that

Tongans base their relationships upon. Thereby, relationships in the workplace that embed these principles, may hinder ICT use if there is a strong adherence to rank, and complying with leaders' decisions despite one's ICT skills.

In the domain of culture and ICT in Oceania, there is limited literature available. In the case of Olutimayin's (2002) study, he discusses the relationship of culture and IT, and states that these two elements need to function holistically. Furthermore, Chan Mow (2012) also raises cultural factors in light of ICT development in Samoa over a 20-year period. However, in the region of the South Pacific there is more yet to be discovered in terms of culture's role, position or influence on ICT use in these countries. Moreover, further understanding of the perception of culture and preservation, of the potential challenges restricting the use of ICT, and contributing factors that impact the use of information systems (IS) within the preservation process in Tonga are also to be explored.

Therefore, applying a social embeddedness lens (Avgerou, 2008) to Tonga, I seek to explore digital technology for preserving cultural heritage. Based on existing literature I expect that culture would play a part in how ICT is used in Tonga and applying a social embeddedness lens will help me understand culture in this local context. This understanding will provide insight into the relationship between people and technology in Tonga, and help answer the research question: How is digital technology utilised in the process of preserving cultural heritage?

Using a social embeddedness lens, I will explore cultural constructs in Tonga that are meaningful to the local peoples. This exploration will aid me to gain an in-depth understanding of the role ICT plays in preserving heritage concerning cultural beliefs, values and norms from a local Tongan perspective. To explore the utilisation of ICT within the local context, it is essential to identify how local Tongans perceive ICT and the preservation process. Furthermore, locating what cultural, economic and or political factors in Tonga may impact or inform these local perceptions can provide understanding into how ICT can be used in the process of preserving cultural heritage (Avgerou, 2008).

The continuance of cultural heritage is imperative to apprehending and affirming one's Tongan identity in an ever-evolving world. A world where migration opportunities displace families into unfamiliar environments and new non-Tongan cultural behaviours are adopted and then navigated. For instance, families gaining permanent residence status through the ballot system may move to New Zealand and adopt new cultural norms that entail contemporary perspectives of living, that differ from Tongan norms. New norms could include a New Zealand outlook on family relationships (*tauhi vā*), in which families no longer practise the Tongan traditional sibling protocols, where brothers honour their sisters as higher ranking within the family structure. Therefore, digital technology is an option that can aid in the extension of traditional Tongan behavioural norms that have been passed down through the generations. Stories accompanying

these behavioural norms can strengthen and sustain one's identity as a Tongan and serve as a reminder of Tonga's roots to the Tongan diaspora.

Additionally, ICT has the potential to capture the rich culture and history of Tonga, one that recites stories of a thriving empire. Stories include the undisputed era of Tonga's maritime chiefdom (Clark et al., 2008). This was an empire that navigated the ocean using star constellations as a method of guidance and sailing in large crafted *kalias* (Tongan canoes) that were technologically advanced for their time. Furthermore, Tonga's monumental works, for example, the '*otu langi 'i Lapaha* (ancient tombs in the village of Lapaha) are displays of Tonga's technological advancement in its time. These tomb hills were unprecedented in Polynesia and had an estimate of 2500 tons of quarried stones in the tombs alone (Clark, Burley, & Murray, 2008). The monuments encapsulate the sophisticated capability of Tongans to use technology to build such large tombs, as well as the transportation of the large stone slabs. Such tangible heritage is a strong moiety of Tongan history, and technology played a part in the stories that tell Tonga's history. Therefore, technology is not new to Tonga but has evolved with time. As such, digital technology is an option that can support the preservation of Tonga's cultural heritage as well as transfer and disseminate it through various channels. Therefore, the transmitting of these rich stories to the next generation is ensured and in the long term not omitted from Tonga's history.

As part of contextualising my research, I will reference oceanic nations that share cultural and geographical similarities with Tonga, such as Fiji and Samoa (Gunson, 1990). This reference will add depth to the case of Tonga and support me to understand the findings identified in this study, due to the scarcity of research related to this research topic.

Furthermore, multiple interviews in the form of a *talanoa* (to conversate critically yet harmoniously) (Māhina, 2008) will be conducted to gain the perspective of local Tongans on technology, heritage and its protection. The *talanoa* will provide rich knowledge and a strong basis for understanding the cultural context in Tonga and its contribution to the research topic. *Talanoa* is the method of choice for this study as it provides a means of communicating that caters to Tongan worldviews. Furthermore, the ontological position that I undertook in this study is that of relativism, which assumes that actions are social constructs of individuals (Scotland, 2012). Also, I employed an interpretivism epistemology, undertaking a case study methodology to explore my research topic.

Lastly, my motivation for this study stems from an appreciation of my Tongan cultural roots and a sense of duty to add value to the journey of preserving Tonga's cultural heritage. The Tongan motto '*Koe 'Otua mo Tonga ko hoku tofi'a*' (God and Tonga are my inheritance) captures my motivation and provides a holistic description of why this research topic is important to me.

This study is structured as follows and will address the research question: How is digital technology utilised in the process of preserving cultural heritage in Tonga?

Chapter 2: Literature Review – This chapter will concentrate on key literature as related to culture, heritage and information and communications technology, and, in addition, how these three terms are viewed in Tonga and in developing countries.

Chapter 3: Methodology – This chapter discusses the ontological and epistemological positions that I undertook in this study. Furthermore, an overview of the case study methodology and the *talanoa* method are elaborated on. The chapter ends with a discussion on the research design and the thematic analysis which was undertaken to analysis the data from the participant's transcripts.

Chapter 4: Findings – The findings chapter will discuss three findings that were constructed from the data of the participant transcripts: Preservation of cultural heritage and digital technology, existing challenges that affect the preservation of cultural heritage, and bottom-up initiatives for preservation of cultural heritage.

Chapter 5: Discussions – The discussions chapter will provide an interpretation of the key findings and the implications. It will be divided into three sections corresponding to the sections in the findings chapter. The three sections in the discussion chapter are as follows: Culture influences the use of ICT, challenges accompany the use of ICT in Tonga, and emerging initiatives.

Chapter 6: Conclusion – The final chapter will provide concluding remarks, which synthesise the research outcomes and the key findings of this study. In addition, limitations of this study will be highlighted, and future research areas proposed for further investigating.

Chapter 2: Literature Review

After introducing the purpose of this study in Chapter one, the aim of Chapter two is to review the existing literature as it relates to the research topic: An exploration of digital technology for cultural preservation in Tonga. While there has been much research in the field of digital technology and its role in preserving cultural heritage, few researchers have considered the case of Tonga. This chapter begins with an account of selected literature reviews under three headings: Cultural heritage, information and communications technology (ICT), and a review of the social embeddedness discourse (Avgerou, 2008), the selected lens with which this study is viewed.

2.1 Cultural Heritage

Culture has various facets and can be defined in many ways by different societies. Societies assign various meanings to the term culture which include, but are not limited to, the following: “(1) a body of artistic and intellectual work; (2) a process of spiritual and intellectual development; (3) the values, customs, beliefs and symbolic practices by which men and women live; or (4) a whole way of life” (Eagleton, 2016, p. 1). Furthermore, culture is commonly defined as shared sets of core values, sets of beliefs, and important understanding of one’s place of belonging (Leidner & Kayworth, 2006; Olutimayin, 2002). Various assertions of the meaning of culture suggest that the definition of culture may vary for different groups depending on their perspectives and own orientation (Helu-Thaman, 1995). This, in turn, reflects on distinctive historical, socio-economic and political contexts (Helu-Thaman, 2008). The historical context refers to a culture’s distinct history which includes events associated with it that have informed and shaped its country. The socio-economic context concerns the relationship between the social aspects of the culture and its economy. The distinctive political context relates to a country’s governmental affairs, and the influential factors unique to this environment.

Further, the term cultural heritage is defined by Abd Manaf and Ismail (2010) as “our legacy from the past, what we live with today and what we pass on to future generations” (p. 107). Cultural heritage takes on a broad meaning to symbolise not just physical property but also relates to matters of cultural values or practices of heritage, for instance, language. Associations tied to these matters of cultural values facilitate the sentiment of being part of a group (Blake, 2000). This sentiment suggests that heritage closely connects to kinship, which is centred on relationships between the past and the present, of identity and being of the other – meaning of a different cultural orientation (Graburn, 2001). Therefore, cultural heritage is more than just everything that one inherits from their predecessors (Blake, 2000); it also encompasses “traditional knowledge and traditional cultural expressions that are both tangible and intangible” (Talakai, 2015, p. 55).

2.1.1 Cultural Heritage in the Pacific Islands

Providing a Tongan perspective on culture, Helu-Thaman (2008) defines culture as “the way of a life” (p. 462), and embedded in this are intrinsic values, languages and knowledge systems that are unique to Tonga. Helu-Thaman’s (2008) definition highlights that culture is a lens for understanding human relationships in Tonga. As such, recognising “that members of different cultural groups have unique systems of perceiving and organising the world around them” (Helu-Thaman, p. 249) is essential to this study. The term cultural groups is in reference to the various different cultures that can be found across the world. Recognising that different cultural groups may have unique views of perceiving the world around them, is the basis of understanding cultural heritage in this study.

Equally, most oceanic indigenous communities regard culture as “something that is lived and continually demonstrated as a matter of behaviour and performance” (Helu-Thaman, 1995, p. 723). Helu-Thaman (2008) provides a clear and distinctive definition of culture that relates to Tongan worldviews, which is the reason I will use this definition in my study.

Notably, Oceanic nations share common traditional methods for preserving cultural heritage, which embeds a holistic notion of heritage. The Tongan anthropologist Professor Epeli Hau’ofa provides a Tongan perspective on the concept of holism in his publication of, *Our sea of Islands* (1993). In his study, Hau’ofa compares perspectives of how inhabitants of Oceania traditionally perceived their world holistically and understood the sea to be a connector rather than a divider of the islands. The former focused on the islands in Oceania as being small and remote (Hau’ofa, 1994), while the latter is a more holistic view “...in which things are seen in the totality of their relationship” (Hau’ofa, 1994, p. 154). Totality in the context of this study is the “whole set of elements that are meaningfully interrelated in such a way that the essence of each element can only be understood in its relation to the others” (Lukács 2013). Totality is based on holism which is defined to mean “that the whole (in Greek holos) is more than the sum of its individual parts...holism contends that social realities cannot be illuminated in reference to individuals and their actions, but must instead be explained on the basis of their own principles” (Subrt, 2019, p. 65). According to McMillan, Stanga and Van Sell (2018), holism means that one part of the whole system cannot function without the whole or a disturbance of one part of the whole system impacting on other parts of the system. Therefore, to provide a comprehensible context of Tongan culture and add depth and rich meaning, the idea of cultural heritage and preservation as a holistic process is considered in this study.

Also, in Tonga, a communal belief system upholds the needs of the community first before the individual or immediate family (Prescott & Hooper, 2009). This societal approach is a hallmark of the Tongan culture and is embedded in everyday social, economic and spiritual activities. Prescott and Hooper (2009) comment that the "treatment of natural resources such as the sea and land followed a common model, regulated only by the intertwined relationships and values that

hold the community together", (P. 288). Community interconnectedness is universal amongst Oceanic nations, as detailed by Helu-Thaman (1995).

“Oceanic peoples – variously described by Western scholars as Melanesian, Polynesian and Micronesian – generally have cultural identities and world views which emphasize place and their links to the *vanua/fonua/ple* (inadequately translated into English as “land”), as well as networks of exchange and/or reciprocal relationships”, (p. 723).

2.1.2 Preserving Cultural Heritage in the Pacific Islands

Preserving cultural heritage in the Pacific Islands existed long before the arrival of digital technology. Ali (2017) remarks that in the case of the indigenous people of Fiji - the *iTaukei* – there is a belief that the wisdom and refined knowledge of their ancestors and elders have enabled the survival of their culture, language and traditions for generations. In Tonga, cultural heritage is usually maintained using traditional methods in the form of performing arts (*faiva*), storytelling, and memorisation (Tu’ivakano et al., 2016) to name a few. Sanga (2004) states that across Oceania the transfer of knowledge was exclusive to the social reality and context of its people. Particularly, Sanga (2004) makes the following statement:

“In the Kiribati context, knowledge is orally communicated by the *boto*. In parts of Polynesia, certain domains of knowledge are constructed and disseminated during *talanoa* sessions. Among the Tikopia people key historical knowledge is danced and sung, rather than being told as a story”, (Sanga, 2004, p. 46).

The above quote by Sanga (2004) supports the notion of traditional methods of preservation that are widely practised in the Pacific Islands. Similar to other Oceanic nations Tonga uses traditional preservation methods that include knowledge disseminated during *talanoa* sessions, which often took place during *faikava* (kava circles), and preservation through traditional dance, songs and stories (Tu’ivakano et al., 2016). Further preservation methods include memorisation, the oral passing on of traditional knowledge, books, and through conserving stories through the art forms. According to Māhina (2008) Tongan traditional art falls under the following three categories: *faiva* (performance arts), *tufunga* (material arts) and *nimamea'a* (fine arts).

However, considering recent technological advances, societies like Tonga reconsidered their knowledge preservation methods due to the influence of modern phenomena like globalisation and migration, and other external threats such as cyclone weather. For example, in Tonga between the months of November and April, the cyclone season can cause havoc on buildings that safeguard historical documents. ICT can conserve the traditions of the past while reconciling it with the present. It would be valuable to align ICT use with the existing notion of cultural heritage in Tonga in order to provide a meaningful and authentic experience with regards to ICT.

Local Tongans interacting with ICT in a meaningful manner is essential for the preservation of their cultural roots. A meaningful manner would consider culture holistically in Tonga and apply this notion to how ICT is used in the process of preserving cultural heritage. As a result, ICT as a

tool for cultural heritage preservation can occur in a manner that makes sense to the Tongan people, and that takes into consideration their cultural perspectives of preservation. However, whether ICT as an option for cultural heritage preservation is yet to be understood. This study seeks to understand the research question and in doing so to fill the gap in the literature regarding ICT use for preservation efforts in Tonga.

Oceanic nations like Fiji and Samoa are used as examples to provide context for this study, due to the limited literature of Tonga with regards to the digital technology phenomenon. Furthermore, studies focused on Fiji will provide an understanding of the digital technology phenomenon in the South Pacific to support this study with its case on Tonga. Tonga is comparable to Fiji in that they share common histories (Helu-Thaman, 1995), but the former is yet to activate the full potential of ICT as a viable option to preserve its cultural heritage. Fijians have realised the great potentials of ICT and initiated various projects to preserve their cultural heritage. For example, Fiji currently has an online virtual museum, a collection of audios and written cultural heritage records in a central database, along with a manifesto of law and policies related to cultural heritage (Techera, 2011). Although this example of Fiji provides an idea of how ICT is currently being used in the Pacific islands to safeguard cultural heritage, researchers are yet to explore how digital technology is used in the process of preserving cultural heritage in Tonga.

2.2 Information and Communications Technology

There has been a rapid increase in information communication technology (ICT) use as societies are offered a vast array of new and innovative communication capabilities. According to Laudon (2010), ICT is a mode of technology that involves activities embodying storage, information creation, manipulation, communication, as well as their related applications, procedures, systems and management. Additionally, ICT focuses primarily on communication technologies such as the internet, cell phones, wireless networks, and the devices and software that transfer data from one location to another (Laudon & Laudon, 2018). As of recently the internet is the world's largest and most widely used network for communication and sharing of information, "The internet is a global network of networks that uses universal standards, to connect millions of networks in more than 230 countries around the world", (Laudon & Laudon, 2018, p. 49). As such, the internet potentially is a vehicle for transmitting cultural heritage via social media platforms such as Facebook which enables effective and swift dissemination. In this study, the internet is referenced as a tool for preserving cultural heritage due to its accessibility, and also because it allows knowledge sharing around the world.

2.2.1 Information and Communications Technology in Developing Countries

In Fiji, Techera (2011) highlights the challenges of adopting IT and the measures undertaken to safeguard the cultural heritage process from external threats. These challenges include

globalisation (Akpan, 2003; Bada, 2002), migration (Olutimayin, 2002) and technology advancement amongst other challenges to Fiji's rich history and cultural legacy. Bada's (2002) study discusses the impact and influence of globalisation on local practices of developing countries. Benyon and Dunkerly (2000) state that, due to globalisation, Western culture is penetrating indigenous cultures eroding their way of life. Despite these challenges, Oceanic nations as in the case of Fiji's government are responding to these challenges by striving to develop initiatives, refine its heritage policies and laws, and improve its strategy to protect a wide range of its own valuable cultural heritage (Techera, 2011).

There is still much needed research to be conducted in the Pacific regarding the digital technology phenomenon. This observation is made based on the limited studies conducted in this region of the world with regards to ICT and preserving cultural heritage. Therefore, this study is an important undertaking as it will add to the existing body of literature regarding ICT in developing countries and specifically in Tonga.

2.2.2 Information and Communications Technology in Tonga

Information and communications technology (ICT) has facilitated access to the internet via smartphones and other devices at a steady and ever-increasing rate. This technological advancement has enabled Tongans to share various elements of heritage both within Tonga and among the Tongan diaspora, using the internet as a platform, for example, the use of the internet network infrastructures to transmit traditional knowledge and stories instantly via social media platforms such as Facebook and YouTube. Despite the global increase of ICT use and the number of local Tongans deploying social media to record and disseminate cultural knowledge little is known of how ICT can be used in the process of preserving cultural heritage and what this could mean for local Tongans. Therefore, any challenges or factors that emerge from utilising ICT in the preservation process are based on studies conducted in other Oceanic nations and will provide an indication of how ICT utilisation for the purpose of preserving cultural heritage can potentially be experienced by local Tongans.

2.3 The Social Embeddedness Approach

The term embeddedness evolved out of the economic field and was socialised by the economic historian Karl Polanyi (Hann, 2017). Mark Granovetter (1985), a sociologist, further developed Polanyi's notion of economics by stating that economic decision-making is embedded in cultural norms, social relationships, religion and politics, and not based on individual decisions alone. Accordingly, Dobryakova and Kotelnikova (2015) in their study identify Granovetter and Karl Polanyi as introducing embeddedness as the concept of 'social embeddedness of economic action'. Dobryakova and Kotelnikova (2015) define social embeddedness of economic action as a concept "that lies in the fact that economic actions are carried out not by atomized actors, but

are rather built into specific social relationships between living individuals, and these relationships affect economic results are ultimately achieved” (p. 9). Furthermore, Dobryakova and Kotelnikova (2015) deployed social embeddedness of technology as the angle for their study. I adopt the social embeddedness approach in my study in order to understand how Tongans in Tonga perceive ICT, and if and how they leverage ICT to preserve their cultural heritage.

2.3.1 An Explanation of Social Embeddedness

A review of research regarding information systems in developing countries (ISDC), identifies three prominent discourses that permeate ISDC literature (Avgerou, 2008). Avgerou (2008) highlights that the three discourses prevalent in information system implementation as well as organisational and social change are social embeddedness, transformative ISDC and transfer and diffusion. These three prominent discourses on ICT are based on assumptions concerning the IS innovation process in developing countries "and relevant conceptual constructs in the study of these processes" (Avgerou, 2008, p. 135). While ISDC literature concurred on this common ground, differences existed with regards to how authors explore IS innovation, and how development occurs in the context of developing countries (Avgerou, 2010). Having analysed the three discourses I determined that social embeddedness has been identified as the most appropriate lens for this study.

According to Avgerou (2008), social embeddedness conceptualises that ICT innovation is a local process comprised of social change and technology construction. Orlikowski (1996) affirms that social innovation is a result of organisational transformation based on how local actors make sense of it. As such, this study places an emphasis on the "local problematizations and its courses determined by the way local actors make sense of it and accommodate it in their lives" (Avgerou, 2008, p. 135). This emphasis is essential as it takes into consideration how local Tongans view ICT, the factors that inform their views, and ICT's application in the process of preserving cultural heritage.

2.3.2 Social Embeddedness Applications

In Walsham's (2017) study, he highlights the different approaches of various disciplines towards ICT. For instance, computer science constructs artefacts or systems but often misses substantial analysis of the engagement of ICT artefacts and the context (Walsham, 2017). In contrast, disciplines such as anthropology and sociology may discuss the context in depth but do not create artefacts (Walsham, 2017). As highlighted earlier, the social embeddedness approach is used by researchers in ICT, although the term is not always explicit. Madon, Reinhard, Roode and Walsham (2009) studied the digital inclusion projects in the developing countries of India, South Africa and Brazil. This study particularly focused on the processes of institutionalization of the digital inclusion projects. Three case studies were analysed and used to identify four key processes

of institutionalisation. These key points were then argued by the authors to be relevant to all inclusion projects.

Walsham and Sahay are part of a group of researchers who are renowned for addressing the themes of local adaptation and cultivation of IS in new environments. Researchers who belong to this group share the opinion that bringing new technologies to a local context involves “cultural learning and mutual learning” (Walsham & Sahay, 2007, p. 319). Accordingly, Avgerou’s (2008) study also identifies the importance of understanding cultural constructs of a new local environment implementing ICT. For instance, in Tonga it is important to identify and understand the cultural elements that would impact the use of ICT for preserving cultural artefacts; hence, providing a better insight of how ICT can support the preservation process in Tonga.

Rajão and Hayes (2009) in their study provide an analysis of IT based on the uses made of the Amazon monitoring system. The analysis looked at the ways that IT artefacts mould and are shaped by institutional contexts. This system consists of a set of radar and satellite based geographic IS that the Brazilian government implement to track deforestation. In their study, Rajão and Hayes (2009) discussed three conceptions of control that motivated the use of the system over time: military perspective, economic and ecological (Rajão & Hayes, 2009). The authors utilised social embeddedness as a means of understanding the history of enduring and changing institutional environments, and also the way in which this was impacted by ICT (Walsham, 2017). The approach in the case of Rajão and Hayes (2009) is an example of social embeddedness although not explicitly stated in the study.

Furthermore, Olutimayin’s (2002) study discusses the challenge that IT imposes on culture and highlights how the “leap from the coconut wireless to electronic bulletin boards, packet switching, fax machines and broadcast television”, (p. 10), may be taxing the capacity to integrate them into the traditional lifestyles still found in many parts of Oceania. The discussion that Olutimayin (2002) presents supports a social embeddedness approach as he highlights the importance that culture has on ICT use across Oceania. Although not explicitly stated in Olutimayin’s study, social embeddedness is espoused by the author who investigates how IT can be integrated into the cultures of the South Pacific region to provide maximum benefit. For instance, in Tonga the utilisation of ICT is influenced by cultural conditions embedded in its society, such as its highly stratified, patriarchal and hierarchical social culture (Burley, 1996; Ikenberry, Kalathil, & Boas, 2003; Kaeppler, 1971)

2.3.3 Social Embeddedness: The Selected Lens

Overall, the extensively researched studies presented by Avgerou (2008, 2010), Bada (2002), Orlikowski (1996) and Rose and Straub (1998) in their studies, helped validate social embeddedness as the appropriate lens for this study in order to explore how digital technology is

utilised in the process of preserving cultural heritage in Tonga. The leading factor for this decision is the focus of the IS innovation process as “an adaptation to local social conditions” (Avgerou, 2008, p. 133). Furthermore, social embeddedness is selected as a suitable lens for viewing socially constructed factors such as culture in Tonga, that contribute to the success or failure of using ICT to preserve cultural heritage. As a result, under the social embeddedness lens, social factors that are important to local Tongans are considered, in order to gain a better understanding of the implications of digital technology in the process of preserving cultural heritage in Tonga.

The social embeddedness lens will enable the understanding of the preservation process by considering cultural factors that are influencing the "development and implementation of ICT systems and concomitant organisational change" (Avgerou, 2008, p. 134). In Tonga, cultural factors are important to consider for any ICT project, as elements unique to the Tonga context are accommodated by local peoples when using ICT. Unlike the transformative ISDC and transfer and diffusion discourse, social embeddedness is a more suitable lens through which to view this study. For instance, it provides a lens that allows a better understanding of local Tongan perspectives, explores how ICT can be utilised as an option to safeguard cultural heritage that considers the cultural conditions, and collaborates and co-creates relationships towards ICT use – in a manner that is meaningful to the Tongan people. For instance, the meaning local Tongans apply to the digital preservation (or recording) of their traditional knowledge, such as the Tongan *kupesi* (traditional artistry patterns) and what it means to display these online. A social embeddedness lens will help me understand whether the use of ICT to digitise Tongan *kupesi* and have these displayed on the internet is valuable for the Tongan people. Furthermore, taking into consideration the cultural structures and norms that Tongan people accommodate, I will understand what meaningful preservation looks like from their perspective. Identifying and acknowledging the cultural factors are essential for what Avgerou describes as an understanding of IS by analysing the relationship between the social and technical aspects (Avgerou, 2001).

Indeed, the emphasis of social embeddedness is placed on investigating local meanings amidst its social, economic and political context, and exploring the local techno-organisational change as a result of these conditions (Avgerou, 2008). In the case of Tonga, this is an appropriate approach as local Tongans will be more likely to relate to and accept solutions that fit the local context and have been developed with contributions of their input and advice. Further, if they are involved in the development and implementation process the use of ICT is likely to be higher.

On the contrary, a transfer and diffusion discourse assumes that developing countries seek to integrate the technological advancements of developed economies into their ICT adoption and development (Avgerou, 2008, 2010; Bada, 2002; Rose & Straub, 1998). Essentially, authors utilising the transfer and diffusion discourse believe “that the material/cognitive entities that comprise IS technologies and associated practices of organising are independent from the social

circumstances that give rise to them to be transferable, more or less intact, into any other society” (Avgerou, 2010, p. 3). Authors who use the transfer and diffusion discourse in their studies, regard IS development and systems as something that can be modified and adapted to fit various local situations (Avgerou, 2008, 2010; Bada, 2002). However, the transferring of technologies developed in advanced economies, can have limited application in the local context of a developing country. Accordingly, Kiggundu’s (1986) study states that sociotechnical systems developed in Western countries are lacking “with respect to cultural adaptation” (p. 342). Furthermore, this is due to the different “legal, social, political, and cultural systems, different economic and technical realities and individual and systemic powerlessness” (Kiggundu, 1986, p. 343).

Accordingly, Avgerou (1998) states that a focus solely on technological factors for ICT development, is not as important as understanding of human factors that affect the development process. Ashraf, Swatman, and Hanisch (2007) purport that the development of ICT initiatives and frameworks are generally based on similar factors which lead to a one-size-fits-all view of ICT development. This view often leads to a low priority given to the local context and socio-economic conditions of developing countries (Ashraf et al., 2007). Inevitably a lack of consideration given to a people's local contexts can hamper the preservation process. This is due to not understanding the social context that local actors accommodate, and how this could possibly impact the use of ICT for preserving cultural heritage.

Lastly, the transformative ISDC discourse regards IS innovation as a transformative intervention associated with the processes of change in the social, economic and political condition of a developing country (Avgerou, 2008). Similar to social embeddedness discourse, transformative ISDC is a situational discourse. However, authors of transformative ISDC are concerned with creating possibilities to improve living conditions in a particular context, with regard to the global socio-economic environment, and the processes with which "IS innovation leverages large-scale and deep socio-economic change" (Avgerou, 2008, p. 135). Akpan's (2003) study determines that ICT and globalisation are interconnected. For instance:

“by reducing the cost of communication, IT has helped to globalize production and financial markets. In turn, globalisation spurs technology by intensifying competition and by speeding up the diffusion of technology through foreign direct investment. Together globalisation and IT crush time and space” (Akpan, 2003, p. 267)

The quote by Akpan suggests that factors such as globalisation support the IS innovation process by quickly spreading technology. Therefore, ICT and globalisation work together to efficiently improve living conditions of developing countries.

The transformative ISDC discourse, of the three discourses, is the least identified in research literature. Despite being the least identified, Avgerou states in her study that transformative ISDC

does explicitly address “strategic issues of IS innovation associated with the development struggle” (Avgerou, 2008, p. 136).

Having considered the transformative ISDC discourse approach toward IS innovation and its regard to the global socio-economic environment, I determined that it would not be a suitable lens through which to view this study. The development struggle of Tonga is not the focus of this study but rather the focus is about exploring how digital technology is utilised in the process of preserving cultural heritage.

2.4 Summary

The extensive literature on ICT use in developing countries provides some useful notions to consider when exploring how ICT is utilised in the process of preserving heritage in Tonga. This is beneficial as there currently is a scarcity of research exploring the phenomenon of ICT and preserving heritage in Tonga.

Although existing literature is a starting point to begin exploring this research topic, unique cultural elements of Tonga’s society may differ significantly from those studied in other developing countries. Moreover, there is yet a study to be conducted on Tonga that focuses on the role of digital technology in preserving cultural heritage. This study aims to address this gap in the research and provide an understanding of how digital technology is utilised in the process of preserving cultural heritage in Tonga, but from the perspective of the local people.

Furthermore, this study aims to view the research topic through a social embeddedness lens which will help me understand the cultural factors unique to Tonga, and how these factors influence ICT for the purposes of preservation. For instance, a local Tongan cultural factor to consider would be the very stratified hierarchical nature of the society. For this reason, in Tonga, research is required to understand the socio-technical relations between people and technology, and whether this impedes the utilisation of ICT within the preservation process while seeking to understand why this case may be. Only then a solid understanding of how ICT can be leveraged to safeguard cultural heritage in Tonga could be secured.

Chapter 3: Methodology

The following chapter is divided into three sub-sections: philosophical underpinnings, data collection and data analysis. First, I will discuss the philosophical underpinnings in this study. This section will discuss the case study as the selected methodology and the qualitative approach from the perspective of interpretivism. Second, the section on data collection outlines the research process undertaken for this study which includes the use of *talanoa* as a method, recruitment of participants and elaboration on the selected sample. Third, the data analysis will discuss the thematic analysis and the steps undertaken in this process to construct my findings.

3.2 Philosophical Underpinnings

A philosophical perspective is a way of making sense and explaining society and the human world. The philosophical perspective I will undertake in this study will be based on my elected paradigm. According to Scotland (2012) a paradigm consists of these components: ontology, epistemology, methodology and methods. Crotty (1998) defines a paradigm as a worldview or a set of interconnected assumptions about the world. Additionally, a paradigm can also be referred to as a cognitive perspective “or a shared set of beliefs to which a particular discipline adheres” (Crotty, 1998, p. 74).

According to Crotty (1998), paradigms are informed by ontological positions. Ontology is derived from the Greek words ‘onto’ to mean being, and ‘logia’ to mean theory, study or science (Slevitch, 2011). Furthermore, ontological positions relate to the assumption of what is reality or what constitutes reality (Scotland, 2012). My assumption is that reality is a social local construct that “is produced and reinforced by humans through their action and interaction (Orlikowski & Baroudi, 1991, p. 14). To explore digital technology for preserving cultural heritage in Tonga, it is essential to understand the research question from the perspective of local Tongans. In order to understand what realities exist in Tonga with regards to the digital technology phenomenon, my ontological assumptions will help me understand these realities from the perspective of the local Tongan people. As such, Guba and Lincoln (1989) defines ontology as the knowing of what realities exist or can be said to exist, and what kinds of connections there are amid categories of being.

An ontological position institutes a process of knowing that leads to the term epistemology. Epistemology is derived from the Greek word ‘episteme’, to mean knowledge (Scotland, 2012) and is defined as “a theory of knowledge concerned with the nature and the scope of knowledge” (p. 76). Scotland (2012) explains that epistemological assumptions are based on how knowledge is created, developed, conveyed, and expressed differently.

One of the fundamental questions that epistemology addresses is, “how do we know what we know?” (Crotty, 1998) which leads me to the term methodology. Guba (1990) states that

methodology is “a theoretical and philosophical system that structures the way research is conducted”, (p. 75). Furthermore, Guba and Lincoln (1994) state that findings are created when the researcher and participant interact with one another. The epistemological approach I adopted for this study is interpretivism. This approach seeks to “understand the subjective world of human experience” (Cohen, Manion & Morrison 2000: 22) and if possible “to explain the subjective reasons and meaning that lie behind social action” (Terre Blanche & Durrheim, 1999:6). In the case of Tonga, undertaking an interpretivist approach to the research question, I will explore the realities of the twelve participants to find a consensus on truth regarding the research question. Scotland (2012) states that truth is consensus formed by co-constructors and that “knowledge has the trait of being culturally derived and historically situated. The interpretive paradigm does not question ideologies; it accepts them” (p. 12)

According to Hancock and Algozzine (2017), employing a qualitative approach helps the researcher gain a richer understanding of the research topic. Additionally, Denzin and Lincoln (2013) propose that a qualitative research is a situated exercise that will locate the researcher in the world of the participants. Therefore, research with a qualitative design enabled me to better understand and make sense of my research topic from the perspective of the local Tongan participants, taking into consideration societal factors which may impede or support the use of digital technology for the conservation of Tonga’s cultural artefacts. Indeed, a qualitative approach supported my exploration of the experiences of the Tongan peoples, the constructs of their world and the meaning given to their experiences.

Having considered the scarcity of literature concerning the use of digital technology for preserving cultural heritage in Tonga, I employed a qualitative research design. This led me to take an explorative perspective on the study, and as such, I was open to the patterns that were emerging from the data as part of my thematic analysis. Taylor and Søndergaard (2017) affirm that exploratory research design is pertinent in the case of a deficiency of literature. As a result, incorporating an exploratory perspective contributed to my understanding of how digital technology is utilised in the process of safeguarding heritage in Tonga. For this reason, I aimed to maintain an unbiased and open-minded approach towards the digital technology situation in Tonga.

3.3 An Overview of the Case Study

To capture the perspectives and experiences of Tongans in Tonga engaging with digital technology, cultural heritage or both, I employed a case study approach. According to Hancock and Algozzine (2017) a case study will provide clear boundaries on planning my research design. As a novice researcher this proved beneficial as I commenced designing my research plan.

Additionally, I kept in mind Dul and Hak (2008), who suggest that a case study investigates an occurrence in its existing reality (Collis & Hussey, 2003).

Furthermore, the case study methodology viewed through a social embeddedness lens will enable me to review the social, economic and political factors unique to Tonga's local context, for example, Tonga's social class system that plays an integral part in the various facets of society.

Additionally, the case study is appropriate as my focus is specifically the nation of Tonga with regards to the research topic. This focus helped me gain an in-depth understanding and knowledge (Hancock & Algozzine, 2017) of the preservation situation in Tonga, and what the implications are for those involved. Due to the very little research literature regarding my research topic, an in-depth understanding and knowledge were required to make sense of how digital technology is utilised in the preservation process in Tonga. Furthermore, this understanding is required as I consider cultural factors in Tonga such as its highly stratified and hierarchical structure (Burley, 1996; Kaeppeler, 1971), where cultural information traditionally has been perceived as something to be guarded rather than shared openly (Olutimayin, 2002).

In summary, the case study helped me with identifying my case as Tonga, and my unit of analysis as the selected six institutions and/or initiatives. The research question was focused on Tonga providing a clear boundary for this study. Accordingly, Creswell and Poth (2018) state that a boundary could be identified as a setting or context. The unit of analysis for this study was identified as suitable for providing an in-depth understanding of the case of Tonga with regard to my research question.

All these five characteristics were used as a reference point to guide the steps of my case study methodological structure.

3.4 Research Design

The ethics approval for this study was granted by AUTECH on the 13th September 2018. An ethics application was necessary for my research as I would be engaging with human subjects in their everyday environment, and I needed to be aware of the ethical challenges that may arise during our interactions (Orb, Eisenhauer, & Wynaden, 2001). Therefore, I needed a procedure in place that would respect both myself and the participant, honouring participant rights and their privacy, as well as honouring the research environment and providing truthful data (Creswell, 2008). Merriam and Tisdell (2016) suggest that such considerations need to be made in advance and any conflict while in the field collecting data be resolved as they arise. As such, participants were encouraged to take some time to read the participant sheet and consent form before commencing the *talanoa*. Furthermore, the documents were also explained during the *talanoa* and participants advised that they could withdraw from the *talanoa* at any point, even if they had signed the consent form. Orb, Eisenhauer, and Wynaden (2001) highlighted that the continuous

renegotiation of consent is a negotiation of trust, and this was something I was aware of with four of my participants who renegotiated consent a few times during our *talanoa*.

As seen in table 3.1 all participants were given pseudonyms to protect their privacy even though they all consented to be named. Vaioleti (2006) states the following regarding Pacific research ethics:

“Integral to poto he anga [he anga means knowing what to do and doing it well/cultured] is tauhi e vaa/vaha ‘a, which refers to what researchers do to maintain a good relationship between themselves, the participants and other stakeholders... It includes...protecting participants' interests, their language, culture, welfare, and reputation before, during and well after the project is completed. When participants give knowledge to the researchers, they and the institution are implicated by reciprocity to honour this gifting by continuing support and tauhi e vaa commitments to the participants' community”, (p. 31).

As a Tongan researcher I understood the concept of *poto he ‘anga* (knowing how to act appropriately) and *tauhi vā* (maintaining relationship), and the importance of protecting the reputation of the participants. So, to protect the participants privacy and keep consistency I gave all participants pseudonyms.

3.5 Unit of Analysis

The recruitment of the participants was done via email, phone calls and by acquaintances organising the *talanoa* meeting for me in Tonga. One participant responded to my email while I was in New Zealand, another I called once I arrived in Tonga and delivered my research outline to, and for the five remaining participants, an acquaintance in Tonga was able to organise the *talanoa* sessions, as she had access to these participants. It was necessary for my acquaintance to set up the *talanoa* as she was connected to the local Tongan community in Tonga and was trusted by the sources. Regarding the casual *talanoa* sessions, three participants were recruited via family members who were local to Tonga and one was recruited by a family member in New Zealand. All participants conducting formal *talanoa* were provided with an outline of my research topic to read and confidentiality forms to sign (see table 3.1 for participant demographics).

Additional to the information in table 3.1, the participants were either a senior Tongan, a senior official, manager, and leader or an employee who operated digital technology in their daily work within one of the five groups. Lastly, participants were selected due to their knowledge and/or skill in the fields of digital technology and/or cultural heritage and/or the preservation of cultural heritage.

In addition, my recruited participants held positions within one of the following institutions that either acknowledged digital technology or cultural heritage in their workplace: government agent(s), a heritage support group, a heritage advocate group, a group who is overseen by the

Royal family and a bottom-up initiative. See table 3.2 for an outline of the group and their area of interest in relation to cultural heritage, digital technology or both.

The elected institutions were further categorised into one of the five groups in table 3.2. Each group had various interests in either cultural heritage or the use of digital technology, see table 3.2.

Table 3.1. Participant Demographics

Participant	Age Group	Gender	Education
Mele	50-55yrs	Female	Tertiary Level
Lupe	50-55yrs	Female	Tertiary Level
Sione	40-45yrs	Male	Tertiary Level
Tangi	50-55yrs	Male	Unknown
‘Uasimoa	30-35yrs	Female	Unknown
‘Ohai	30-35yrs	Female	Unknown
Fusi	50-55yrs	Female	Tertiary Level
Leka	20-25yrs	Female	Tertiary Level
Lisiua	40-45yrs	Female	Unknown
Kameli	40-45yrs	Female	High School Level
Kapeta	50-55yrs	Female	High School Level
Kepu	70-75yrs	Male	High School Level

Table 3.2: Outline of the Groups

Group	The Application of Digital Technology or Cultural Heritage	Area of interest
Heritage Support Group	Interested in developing cultural heritage as a means of supporting Tongan citizens.	Cultural Heritage
Advocate Group	Interested in campaigning for the preservation of Tonga’s heritage.	Cultural Heritage
Government Agent	Implicate technology for the safe storage, sharing and communicating of information with one another as well as with Tongan citizens.	Cultural Heritage & Digital Technology
Royal Heritage Agent	Safeguard Tongan historical records pertaining to essential elements of the culture and history, and who safeguard records that only the Royal household can access.	Cultural Heritage
Others-Community-based Interest Group	Emergred from within the community and stem out of the need to preserve and share traditional knowledge	Cultural Heritage &

	and stories using new modes of preservation, for instance, utilising ICT tools.	Digital Technology
Others	Valuable knowledge holders of cultural heritage in Tonga and used ICT within their line of work for preservation purposes.	Cultural Heritage & Digital Technology

3.6 Data Collection

Creswell and Poth (2018) proposed that an in-depth understanding of a case is presented utilising many data collection techniques. My research primarily utilised *talanoa*; however, online documents were also utilised to provide context and depth to the research.

In this case study the qualitative approach suitably integrates with the *talanoa* method. The value in this aligning of methodology and method is that *talanoa* is natural for most Oceanic peoples (Vaiotele, 2006). Vaiotele (2006) affirms that *talanoa* supports building a “personal relationship where people, story their issues, their realities and their aspirations” (p. 21). The *talanoa* method is acknowledged across Oceania by nations such as Samoa, Tonga, Fiji, Hawai’i, Rarotonga, the Solomon Islands and Niue (Prescott, 2008).

In the case of this study *talanoa* was adapted to the Tongan local context, that takes into consideration the lived realities of my Tongan participants and the cultural norms they live with (Farrelly & Nabobo-Baba, 2014). Furthermore, I applied *talanoa* by catering to conversations on topics which were not related to my research topic. For instance, topics that include sharing family connections and faith. This manner of conversing allowed me to establish a rapport and relationship with my participants first, which permitted more meaningful information to become apparent as we proceeded with the *talanoa* focusing on my research topic.

Furthermore, *talanoa* was employed in my research as I considered it the most culturally suitable method for collecting data, and it caters to an Oceania worldview of communicating (Vaiotele, 2006). Kēpa and Manu’atu (2008) refer to the verb *talanoa* as a way of conversing, relating experiences of every-day life and telling stories. *Talanoa* encompasses the Tongan world view of conversing that include debating, gossiping, reflecting, storytelling, joking, and sharing family connections (Vaiotele, 2006). The vigorous interactive form of conversing incites in-depth discussions and relationship.

The *talanoa* as a method is associated with talking with people and is intertwined with the concepts of cultural engagement (Fa’avae, Jones, & Manu’atu, 2016). However, as a methodology *talanoa* embodies “a practical method and the theoretical concepts used to enact that method, as well as the analysis of the information collected”, (Fa’avae et al., 2016). For my study, *talanoa* is

employed as a method in adherence to Tongan norms and worldviews of communication.

Prior to commencing the *talanoa* sessions, there were a few guidelines that had to be prepared in order to engage *talanoa* successfully. This included selecting an appropriate method to gather data in the field, identifying and selecting suitable participants and their recruitment, and lastly, ethical considerations. All these elements will be elaborated on within this section.

Following the identification of *talanoa* as the appropriate method and the completion of identifying and selecting participants for this study, an interview guide was developed to prepare for entering the collection field. In particular Hancock and Algozzine (2017) in their study recommend developing an interview guide. This is to provide a format to follow during the interview process, especially useful for first time researchers like myself. Therefore, having taken Hancock and Algozzine (2017) into consideration I developed an interview guide with suitable open-ended questions that I asked during *talanoa*. I created questions that were flexible to accommodate the Tongan culture where respect amongst other Tongan behaviours is paramount. For example, in the case of sensitive information, I reiterated to the participant that I might utilise the information provided and would they be happy for this to be used in my study. Also, the types of questions asked to stimulate the participant involved a mixture of opinion, value, knowledge, experience and behaviour questions (Merriam & Tisdell, 2016). My interview questions are attached in the appendix, see appendix four.

Furthermore, I considered the setting in Tonga where the *talanoa* will be conducted. All the *talanoa* were conducted in Tonga 'Eiki (the main island of Tonga) and were administered either at the participant's workplace or in a local cafe in Nuku'alofa. I took into consideration privacy and settings that provided neutrality with minimal distractions and proximity of the individual participant's workplace when choosing café locations. The impact of these considerations on the *talanoa* had the potential to either draw valuable information out of participants or cause the participant to withdraw and withhold information. According to Hancock and Algozzine (2017), a distraction-free environment will increase the likelihood of obtaining rich information from participants.

The field work was done from 18 to 25 September 2018. Before the commencement of the *talanoa*, individual participants were encouraged to converse in either the Tongan or English language, to not restrict language and to create an environment where participants can *talanoa* confidently and candidly. According to Arksey and Knight (1999), interviews conducted in the participant's language is recommended. Of the eight *talanoa*, one was conducted entirely in the Tongan language, two were entirely in the English language, two more were mostly in the English language with reference to Tongan proverbs and critical terms in the Tongan language, and three of the participants chose to converse in a mix of Tongan and English language.

Equally important to language was my demeanour before, during and after the *talanoa*. With this in mind, I undertook a friendly, open and cordial approach. I applied a sense of *maheni* (familiarity) and *fe'ilongaki* (to know of each other's place and identity) (Fa'avae et al., 2016) to build a relationship with my participants in a manner that made sense to them. For instance, my approach aligns with the Tongan expecting to greet by introducing oneself, for example, name and family genealogy before introducing the research topic. Arksey and Knight (1999) support this notion by advising that an introduction of oneself and a short brief on the research topic is made before the commencement of a conversation. Furthermore, I used vocabulary that was clear and easy to understand (Arksey & Knight, 1999), for example pronouncing information communication technology rather than its acronym, ICT. I also engaged in cultural protocols such as complying with the appropriate dress code, for instance wearing of the *kiekie* (traditional waist garment for women) in particular situations, thereby, signalling my Tongan roots and identification as an insider and part of the society.

I conducted a face-to-face formal *talanoa* with twelve participants – nine females and three males – for an average of 30 minutes to one hour and a half on the main island of Tongatapu. A breakdown of all participants is displayed in table 3.1. In addition, the table includes the following details: age group, gender, and level of education. The *talanoa* took place with members of the Tongan community in Tonga, who had access to information related to digital technology and/or cultural heritage and its implication in the process of preserving heritage. In total 12 participant knowledge and perspectives were considered and used as data within this study. Please note that all participants and institutions were assigned pseudonyms to ensure confidentiality and AUTECH ethical adherence (see appendix 1).

Lastly, as part of my data collection I utilised the audio recorder of a smartphone to record the *talanoa* and did notetaking in a journal. The smartphone was selected due to its unobtrusive, subtle and less threatening size, minimising distractions during a *talanoa*. Additionally, as approved by the participant, note-taking was utilised minimally to capture key ideas and Tongan terms that I needed clarity on and could ask at the end of the *talanoa*, to maximise flow and minimise distraction for the participant. It is important to make known that notetaking is not a Pacific method, to avoid any misunderstanding regarding the Pacific *talanoa* method.

Prior to commencing the thematic analysis, I had the eight audio recordings of the *talanoa* sessions transcribed by myself and two paid transcribers following the signing of confidentiality agreements. Nonetheless, I had to re-transcribe three out of the five *talanoa* data sets transcribed by the paid transcribers, as many words were missed or misunderstood due to the mix of Tongan and English language used. This extra step I took ensured the authenticity of the data in order to present accurate findings. Although this was resource consuming, the transcribing of all *talanoa*

helped me familiarise with the data items (Braun & Clark, 2006), ensuring that I was capturing the data accurately.

3.7 Data Analysis

A thematic analysis (Braun & Clark, 2006) was undertaken as the method of analysis for this research. The analysis approach supported me to “identify, analyse, and report patterns (themes) within data” (Braun & Clark, 2006, p. 79). The findings section of my research incorporated both a description of the case and findings that generated or constructed themes during the analysis stage (Creswell & Poth, 2018). Also, my codes were categorised into groups and analysed for parallel relationships (Creswell & Poth, 2018).

Undertaking an inductive approach (Braun & Clark, 2006) to the data, a column in the Microsoft Word document containing the transcript was added to capture keywords, key points, experience, ideas, or emotions in order to generate an initial list of codes. An inductive approach meant I conducted the process of coding the data without trying to fit it into a preconceived coding frame (Braun & Clarke, 2006). I proceeded to thoroughly comb through each *talanoa*, reading segments of the data and making notes in the column. The segmentation of the data was done accordingly – I would ask a question, and the participant would respond, and from that response, I would draw a code(s) from it. This initial coding process is illustrated in table 3.3. Initial coding was with two examples and the codes I applied to these two extract examples. I applied this coding process to the eight individual *talanoa*. Braun and Clark (2006) suggested coding for as many themes and patterns as possible, and this was the approach I adopted. Nevertheless, the initial coding process I found to be the most time consuming of the coding process. For example, for Lupe’s *talanoa* alone, I coded 206 codes from the segments of the data set. Of the 206 codes, there were similar codes that were raised at different points during the *talanoa* and these I included so I could see patterns in Lupe’s perspectives and the information she shared. At the end of the first round of coding, I had coded 766 codes from the eight *talanoa* transcripts. These 766 codes were further refined and grouped into meaningful patterns before ten final codes were identified at the end of the data analysis.

Table 3.3. Initial Coding

Data Extract	Coded As
Example from Sione “So, with culture, you need to remember where you come from, and in order to remember you need to preserve those historical documents and technology is the best way to actually do that”.	<ol style="list-style-type: none"> 1. Technology is important for preserving cultural heritage. 2. Connects culture with identity. 3. A loss of culture is perceived as a loss of identity.

<p>Example Two from Lupe</p> <p><i>"In many ways it's using technology is a way of preserving something that you think is going to die and disappear. So that is the downside of it. But the upside is that it could be a means of communicating the importance of a particular activity. And it's a, it could be a form of persuasion um particularly making it appeal to young people".</i></p>	<ol style="list-style-type: none"> 1. Technology is used as a method for dying elements of heritage rather than viewed as a preventative measure. 2. Technology is valuable can be used to reach younger people.
---	--

Table 3.3. displays two quotations extracted from the *talanoa* with Sione and Lupe. From Sione's data extract I was able to interpret the following three codes: Technology is important for preserving cultural heritage, that Sione links culture to identity, and that a loss of culture was perceived as a loss of identity. These three codes espoused Sione's ideas concerning technology, culture and heritage. The process of coding Sione's data was also applied to Lupe's transcript, and an example of this result is displayed in table 3.3.

Once completed, the list of codes was transferred into a table on a separate word document. The ideas in the table were grouped according to meaningful connections; for example, references to funding challenges were grouped as one and titled 'lack of funding'. Once the meaningful groups were finalised, the word document was printed, and the groups cut and placed on a large paper. This process enabled me to organise the data into further meaningful groups (Braun & Clark, 2006). For example, references by the participants to lack of funding, lack of technological equipment, lack of policy and lack of direction were collated under one group, 'lack of support'. This methodical approach I applied is illustrated in table 3.4. In table 3.4, the column titled 'Coded as' is an interpretation of the data extract; this was then refined, and the first code was established as seen in the column, 'First Codes'. The first code was then interpreted, and a theme established – 'lack of support'.

This phase involved generating themes manually across the 15 codes. I focused on a thematic analysis on the semantic level to generate themes (Braun & Clark, 2006). On the semantic level, themes are found in the explicit meaning of the data as spoken or written by the participants (Braun & Clark, 2006). I also utilised visual representations in the form of posted notes and notebooks, to sort the different codes into themes (Braun & Clark, 2006). Each code was organised and rearranged in a theme-pile on a large paper and a notepad was utilised for noting connections and relationships between codes. Some initial themes became the central themes while others, sub-themes. For instance, a lack of policy and direction initially grouped along a lack of ICT leadership became a sub-theme of a lack of ICT leadership which became the main theme. Please see table 3.5, Example of Sub-themes and Themes, for further illustration.

Table 3.4: Thematic Table

Data Extracts	Coded as	First Codes
<p>Sione <i>“The biggest thing that prevents it [preservation of cultural heritage] is the resources. We don’t have money to all that...”</i></p> <p>Lupe <i>“We need leadership in government, but we can’t do it without their help so unless we have a change in government we are not going to get anywhere. Because this government is not interested in those kind of things” (referring to cultural heritage).</i></p> <p>Fusi <i>“Like at the moment we don’t have a policy [ICT] we only have the Land Act that we hold onto and use”.</i></p>	<p>1. Money is needed to preserve cultural heritage.</p> <p>2. The government is not leading</p> <p>3. Leadership is not interested in preserving cultural heritage</p> <p>4. Need an ICT policy to guide the employees work.</p>	<p>Lack of funds</p> <p>Lack of ICT leadership</p> <p>Lack of policy</p>

Table 3.5: Example of Sub-themes and Themes

First Codes	Sub-Theme	Theme
<p>Lack of funds</p> <p>Lack of leadership</p> <p>Lack of policy</p> <p>Lack of Leadership</p> <p>Lack of Direction</p>	<p>1. Lack of Leadership</p> <p>Lack of funds</p> <p>Lack of policy</p> <p>Lack of direction</p> <p>Lack of policy</p>	<p>Lack of ICT Leadership</p>

Furthermore, I looked to generate or construct themes or categories of events or behaviours, similarities, and differences rather than test a hypothesis (Hancock & Algozzine, 2017). A thematic analysis was conducted to generate my themes and will be discussed in the last section of this chapter.

Chapter 4: Findings

In analysing the *talanoa* data, the three themes that emerged are as follows: Perceptions of cultural heritage and digital technology, existing challenges that affect the preservation of cultural heritage and bottom-up initiatives for the preservation of cultural heritage. I found that despite the awareness of the potential of information communication technology (ICT) to preserve cultural heritage, Tongans face various challenges that hinder their use of ICT for safeguarding their cultural roots. However, I also found that Tongans try to mitigate these challenges through bottom-up initiatives.

Some of the participant commentary quoted within this chapter has been translated from the Tongan language into English to allow the non-Tongan speaking audience to understand the concepts that the participants conveyed.

4.1 Perceptions of Cultural Heritage and Digital Technology

When asked how digital technology is used in the process of preserving cultural heritage in Tonga, all participants had distinct perceptions of how they viewed cultural heritage, the preservation process, and digital technology. Amongst the participants, there was a strong sentiment of the importance of preserving cultural heritage and all recognised the role of preservation as valuable and empowering to Tongan society. These strong sentiments displayed by a number of participants contributed to the construction of the first theme of this study – perceptions of cultural heritage and digital technology. Table 4.1 displays the codes that formed theme one: Cultural heritage as a whole, traditional methods of preservation are valuable, cultural heritage is important to preserve and ICT is an option to preserve cultural heritage.

Table 4.1: Coding of Perceptions of Cultural Heritage and Digital Technology

Codes	Theme One
Cultural Heritage as a whole Traditional methods of preservation are valuable Cultural heritage is important to preserve ICT is an option to preserve cultural heritage	Perceptions of cultural heritage and digital technology.

4.1.1 Cultural Heritage as a Whole

During the *talanoa* sessions, two participants explicitly highlighted the holistic perspective of cultural heritage. These two participants advised that cultural heritage as a whole was meaningful, in respect of the Tonga culture. Therefore, acknowledging holism helped me understand society's perception of ICT and ICT's role in the preservation process. Being aware of the holistic view of the Tongan culture allowed me to understand how ICT is used, or not used in the process of preserving cultural heritage in Tonga.

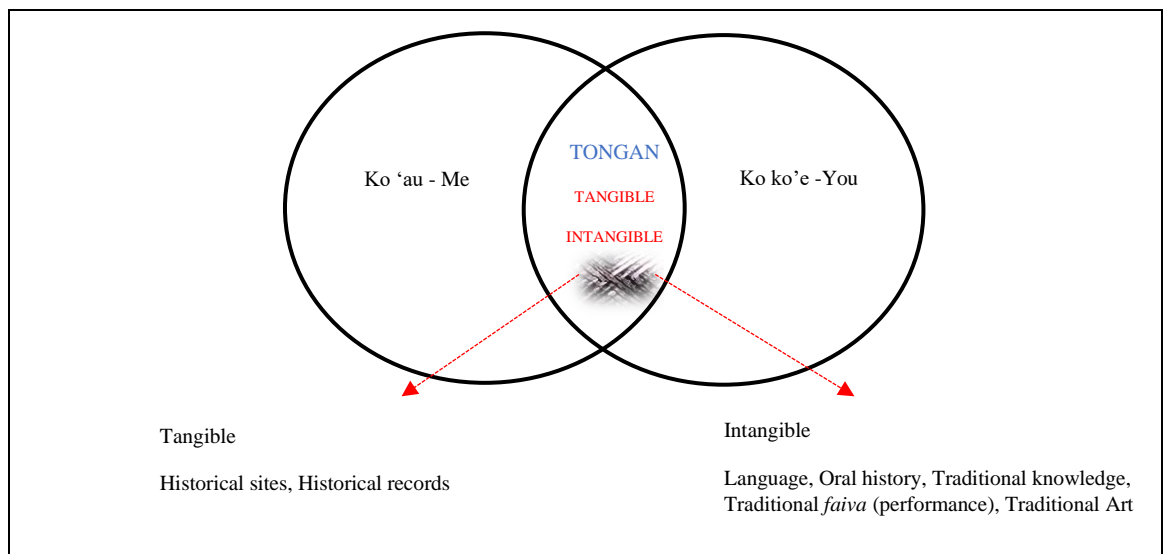
In Table 4.1, I have outlined the process of identifying the theme, cultural heritage as a whole. Accordingly, Tangi emphasised that cultural heritage in Tonga is collective by nature and the past and present are intertwined in a continuous non-static manner, thus, the perception of cultural heritage as a whole. “There is a word called, traditional cultural heritage (*taufatunga motu’a*). It stitches together, the way we live we are all connected...”, Tangi laments. Furthermore, Tangi comments that one could not preserve a part of cultural heritage without preserving all parts. For example, Tangi states that one cannot begin to conserve the Tongan language without preserving the Tongan values that determine what is suitable behaviour. Tangi further highlights the idea of cultural heritage as a whole by describing the interconnectedness of heritage existing as a whole rather than artefacts operating separately.

“The traditional cultural heritage stitches together, in our way of living we are joined together. The essence of the Tongan exists in the space between you and me...I will choose [to preserve] the traditional cultural heritage because that is where the nation is complete...there will be problems when it is separated”, Tangi comments.

In Figure 4.1, I illustrate how Tangi views and describes cultural heritage during our *talanoa*. At the centre of the Venn illustration is the intersection of the Tongan relationship, which is held together by artefacts, tangible and intangible, that make up Tongan cultural heritage. Tangi states that separating these artefacts from the culture as a whole will be problematic. “....there will be problems when they [referring to cultural heritage] are separated into individual entities”, Tangi laments.

Tangi elaborates by stating that problems could include the disregard of acceptable cultural behaviours, potentially leading to a fractured Tongan social structure. For example, intangible artefacts like the Tongan behavioural norm for respecting the parent figure, are intertwined with the tangible artefact of the home. In the home regarding decision-making like determining the monetary amount each family member should give for events like weddings, could be disregarded as individuals choose to determine the amount they will give instead. Such disregard for expected behaviour threatens to unstitch an element of cultural heritage, that could lead to conflict in the Tongan relationship.

Figure 4.1: Holistic view on Cultural Heritage



The recognition of cultural heritage as a whole is a foundation for understanding the cultural context of Tonga. This perceived notion of cultural heritage as holistic is a Tongan perception that is meaningful in the local context and needs to be considered when utilising ICT to preserve cultural heritage in Tonga. Perceiving cultural heritage as a whole influences the process of preserving cultural heritage, especially the traditional methods which are outlined in the following paragraphs.

4.1.2 Traditional Methods of Preservation are Valuable

In addition to cultural heritage as a whole, another pattern which evolves from the data is the use of traditional methods. As well as possessing a holistic perspective in sub-section 4.1.1, Tangi asserts an awareness of the fusion of traditional and modern methods of preservation concurrently co-existing in Tonga by accentuating the Tongan term '*fofoa'i*' (to birth something new) during our *talanoa*. "*Fofoa'i* is a new life, it is a new thought or new thinking...There is the ability in traditional technology to create something new from the old and vice versa", Tangi states. With regards to technology, Tangi believes that traditional or old methods of cultural preservation have a place amongst new and modern technology to safeguard Tonga's heritage. Although Tangi uses a Canon 7D to capture traditional knowledge and stories of seniors across the various villages in Tonga, the use of the traditional preservation method of memorisation, is also activated as part of his chiefly role. These methods consist of reciting traditional knowledge for special occasions, which has been passed down from his forefathers dating back to the year 1210 AD.

Multiple times during our *talanoa*, Lupe referred to cultural heritage information in printed books. Lupe confirmed that a lot of the heritage information that she was sharing with me was unavailable in digital form. In addition, Lupe still acknowledges the book as a valuable vehicle for preserving

heritage. “But this is a book we wrote for the coronation ah in the Tongan language which is part of our efforts to preserve our history...it’s not available anywhere except in that form [book form]”, Lupe laments.

A critical reason for continuing to use books to preserve cultural artefacts was due to affordable and familiar publication and distribution processes. Firstly, the publication of books compared to implementing ICT systems, which includes hiring an IT skilled person to design and develop the system and then training the staff to use and maintain the system, would be cheaper. Secondly, books in comparison to digital technology are a more familiar method of preservation for Tongans. This is due to Tongans having used books much longer than digital technology for preservation purposes.

Similarly, Mele supports the notion of traditional methods of preservation by advising that a lot of her knowledge is memorised and has not been recorded on paper, digitised, or passed down to a member in her family yet. Furthermore, Sione affirms the conception that traditional methods are valuable in Tonga, “There’s a lot of things that have been passed down and shared by grandparents to parents to their children, and continue like that, so that’s one way”. Like Mele, Sione also views memorisation and passing down of knowledge orally as a viable option for preserving knowledge.

Eleven participants perceived traditional methods of preservation and also technology to be useful, and to play a significant part in preserving Tonga’s cultural heritage. In the pursuit of answering my research question, “how is digital technology utilised in the process of preserving cultural heritage in Tonga?” I found that traditional methods are valued by local participants concerning the preservation of their cultural roots. Furthermore, that ICT is an option that can co-exist with traditional methods to support the cultural heritage preservation efforts.

4.1.3 Cultural heritage is important to preserve

Many participants believed that cultural heritage is crucial to preserve for various reasons. Participants highlighted that Tonga's cultural artefacts are precious, valuable and are a source of connection to one's cultural identity. For each of the participants, conserving cultural heritage was imperative, whether this was done by using traditional methods or ICT. Traditional methods as stated in previous chapters include memorisation, oral passing down of traditional knowledge and stories, performance, the kava circle and books. The data collected from the *talanoa* sessions revealed that all the participants were seeking ways to preserve their cultural artefacts as best as they could, because it was perceived to be of value to themselves and society.

During *talanoa*, Lupe discussed her involvement in a preservation project that increased her awareness and appreciation of the Tongan culture. During this project Lupe captured the richness

of the Tongan culture from the stories and language used and shared with her, by the elderly people.

“Because it um, demonstrated and showed me the richness of our culture, and the richness of the Tongan language. When people use it properly. People who know the language and know the history and know the oral history. It was such an eye-opener for me to sit there and listen to these people, sharing their stories and their wisdom over the years. And ah the, the language they used and the example that they drew from it was just, so, empowering”, Lupe.

Lupe captured the richness of these stories by way of memorisation, audio recording and then the transcribing of some of these audio tapes into written form. The project was a turning point for Lupe who felt empowered by the experience. Therefore, Lupe was determined to take an active role in preserving Tonga's cultural artefacts and participated in a group advocating for the safeguarding of Tonga's cultural heritage.

Likewise, Sione believed it is crucial to safeguard cultural heritage. Sione makes the following comment, “So, the thing with culture you need to remember where you came from, and in order for you to remember you need to preserve those historical documents and technology is the best way to actually do that”. Sione suggests that the preservation of cultural heritage is important, and he linked this to being connected to one's Tongan cultural identity. In addition, Sione perceives the utilisation of technology to preserve Tonga's heritage as essential for the process. Furthermore, Sione makes the following statement:

“For me...getting traditional knowledge is important because I mean these people will, they will pass away soon. The sooner we record their knowledge, the better because sooner or later they will pass away and there will be no opportunity to do that.”

Sione's quote demonstrates a perceived urgency concerning the capturing of traditional knowledge of the elderly while there is still time to do so. Sione's sense of urgency is based on an awareness of the importance of Tonga's cultural artefacts.

4.1.4 ICT is an option to preserve cultural heritage

The participants unanimously agreed that ICT is an option for the preservation of Tonga's heritage. During multiple *talanoa* sessions, participants regularly focused on the benefits of implicating ICT in the preservation process. Fusi who specialises in geographical information systems states that technology can be utilised to identify, capture and create awareness of the importance of historical sites amongst the local Tongan community. “The reason technology is used, is to identify significant historical sites, so that the people are aware of its importance to preserve”, Fusi laments.

Fusi believes that the digitisation of historical sites will enable the preservation and dissemination of knowledge regarding tangible sites and their stories, both offline and online. Furthermore, Fusi reflects that preserving heritage will ensure that Tonga's valuable artefacts are shared, prolonged

and used to educate the Tongan peoples and other nationalities of the rich Tongan culture before artefacts like historical documents are lost.

“The truth is, is that it is important to share the information... At times they still store [in paper form], but it's us that reach out and get the records to scan to begin digitising them...the storing in paper form means records at times get lost", Fusi states.

As part of Fusi's role, she is required to rely on satellite data, an internal open source software, a database, and a scanner to identify and capture the historical sites. Also, Fusi views ICT as an option to begin digitising historical land records to keep them from being lost.

It was clear during the *talanoa* with Fusi that she utilises ICT in her work to promote the importance of cultural heritage, because she believes it is important and valuable for the local Tongan community and the Tongan diaspora.

When I asked Sione how digital technology could be used in the process of preserving cultural heritage in Tonga, he stated that there is plenty of technology to conduct multiple cultural heritage projects at the same time.

"There is a lot of technology that can be run in parallel, for instance, record traditional knowledge, someone can run a village project and involve unemployed students, and part of the project may involve students conducting *talanoa*. The students could have set questions, allow them to record the videos and simultaneously others can scan historical documents...it doesn't need to be one separated entity they can all run in parallel", Sione states.

Sione describes that technology supports the process of preserving cultural heritage and enables multiple actions towards preservation to occur at the same time during this process. Sione's reference to technology as a tool that enables various acts of preservation reflects his outlook of ICT as an option to safeguard Tonga's cultural artefacts.

For 'Uasimoa, it was evident during the *talanoa*, that she understood the benefits of using ICT as an option to preserve historical records archived in her workplace and the value of digitisation.

“But with us, we are trying to speak up and seek help...Um for us here staff to be trained on how to handle the files and also into taking them and converting them to technology or digitals... We are trying to digitise the whole record”, 'Uasimoa states.

'Uasimoa perceived ICT as a tool that could prolong traditional knowledge for the benefit of all Tongans now and in the future and was motivated by this idea rather than self-interest. "But with the help of digitals and technologies, I believe if this can succeed, in the future Tongans would read more of what really happened and how Tongan history was in the past, 'Uasimoa.

Tangi also supports the notion of ICT as an option for preservation despite maintaining traditional methods of preservation such as memorisation.

“This is what I notice, you see as part of my work I use the camera, and when I look at the new technology it’s very good...The reality of Tonga is that if we can use technology to preserve everything, we can move on but still be Tongan”, Tangi laments.

During the *talanoa* sessions, Tangi along with other participants was very aware of the value of ICT devices as potential preservation tools.

4.2. Existing Challenges that Affect the Preservation of Cultural Heritage

Despite the awareness of ICT and its perceived benefits and value as an option to safeguard heritage, participants faced various challenges that hinder the utilisation of ICT in the preservation process. Challenges include lack of ICT leadership and direction. Inevitably this affects policy, funding, and education, creating further challenges for utilising ICT. In numerous cases, this has led to participants disengaging from using ICT in the preservation process even though many are technically capable of engaging ICT in the preservation process.

Table 4.2 provides an outline of the iterative analysis process for theme two. The patterns that emerged from the data are a lack of ICT leadership and direction, limited knowledge of existing policy, lack of funding and a lack of education. These codes constructed theme two: Existing challenges that affect the preservation of cultural heritage in Tonga.

Table 4.2: Coding of Existing Challenges that Affect the Preservation of Cultural Heritage

Codes	Theme Two
Lack of ICT Leadership and Direction Limited Knowledge of Existing Policy Lack of Funding Lack of Education	Existing Challenges that affect the preservation of cultural heritage in Tonga

4.2.1 Lack of ICT Leadership and Direction

The lack of an ICT strategy impacts the leadership and decision-making of leaders in governmental agencies like the Ministries as well as other institutions. Due to the lack of transparent processes and instructions by leaders from the institutions of how to leverage ICT to preserve cultural heritage, employees are often uncertain if and how ICT can be used in their daily work in respect to preservation. Uncertainty exists despite the existence of technology needed to digitise poorly conditioned cultural artefacts that need immediate maintenance. The lack of leadership and direction will be discussed in subsequent sub-sections.

During multiple *talanoa* sessions, participants emphasised that Tonga was currently going through a process of political change, with the democratic party in power. I was advised that the government is focusing on topics like their new democratic model, and not prioritising the preservation of cultural heritage.

“With what Tonga is going through now with the change of politics and democracy, the priorities of um things for them is quite different and trying to push this whole piece, and this idea into a government proposal is I think it would be probably a third or fourth issue to handle to draw their attention to. You can probably know by now that Tonga is just too focused on just the change in the democracy”, ‘Uasimoa states.

‘Uasimoa advises that changes to the leadership structure have had an impact on Tonga's strategic direction. For example, as a result of the change in government, policy variations are inevitable. ‘Uasimoa highlights that ICT direction depends on the party in power. For the current government, the development of an ICT strategy that can provide clear legislation and policies with which to guide preservation efforts is not a high priority. By and large, this is due to Tonga's reliance on foreign aid which often means that governmental priorities centre on the agenda and priorities of foreign nations. For example, the joint commitment for the development agreement 2016-2018 between New Zealand and Tonga prioritised energy, law and justice and education.

The lack of ICT leadership and direction means that guidelines are not available for organisations to prioritise and advance the preservation of cultural heritage. Therefore, ICT is not utilised to its fullest capacity within the preservation process, as priorities of leaders are directed elsewhere.

In general, the lack of direction and guidelines concerning the preservation of heritage and the use of IT to safeguard it, reflects in the management and operation of the institutions. For instance, Fusi explains that there is a disconnect between the department she works in, which collects and stores information on historical sites, and the office that administers and approves land ownership. Fusi uses satellite data to identify and register historical sites. However, if a potential landowner visits the front office, the front office personnel do not request further information from her department, to check if a historic site is part of the requested land site. There are neither instructions in place that the front office must request the necessary information from the back office nor are the two IT systems integrated so that the front office could easily access the information through a shared database. Fusi claims that this problem is mainly caused by not having a leader with a technical ICT background and knowledge to understand the potential of technology and integrate the two systems. “Yes, what we are waiting for is someone on the level of Director so that our work can be managed properly. We need someone on that level who understands technology”, Fusi shares.

Both Fusi and Leka highlight that the team leaders do not have a clear strategy and vision on how ICT can and should be utilised within the workplace. Leka states that, “we have the capacity (referring to skills) to get the job done but like I said what we need is someone at the top” [referring to a leader for the department]”. This is particularly frustrating for the participants as they value their cultural heritage and possess the necessary technical capabilities to engage ICT in the preservation process. As a result, this leads to apathy within their workplace concerning the use of ICT due to a lack of direction and guidance from their leaders.

4.2.2 Limited Knowledge of Existing ICT Policy

A significant number of participants commented on the lack of an ICT policy and therefore, the missing direction on how ICT should be leveraged, also with regards to preserving the cultural roots. Contrarily, three participants acknowledged the existence of a national ICT policy, however, were unable to state where it can be accessed or how it can be attained, for instance, whether it was available digitally or in book form. Lupe along with Sione were a couple of participants who knew of an ICT policy.

“We have a national ICT policy which I’m sure is languishing somewhere...that is supposed to provide the regulation for the service for that particular sector, but I don’t think it has been activated. So, it’s still languishing somewhere, and ministries are still carrying on doing their own thing”, Lupe.

However, when I asked where I could access the policy neither one of these two participants were able to advise where it could be accessed. Considering that Sione and Lupe have held various decision-making roles, their vague allusion to an ICT policy indicated that the ICT policy was perhaps not actioned or practised.

Apart from these three participants, the remaining participants were not aware of an existing ICT policy on a governmental level. For example, Fusi comments that there is no ICT policy hence the use of the Land Act, as a guide to direct her work. "In everything, there should be legislation, because then it is easier to do our job for example like at the moment there is no policy only the Land Act that we hold on to". Additionally, Leka laments that, “That’s one of the things they’ve brought up recently because I don’t think Tonga has any IT policies”.

A significant number of participants referred to the nonexistence of ICT policies within their workplace. Most participants felt discouraged without a work policy on ICT to direct their everyday use of ICT with regards to preserving historical documents, historical sites and traditional knowledge and how this information is shared online, how and where it should be stored and who has access rights.

Of all the participants, Fusi was one of two participants who utilises ICT daily as part of her work. I observed that the lack of policy for these two participants, who were technologically very capable, was impeding the implementation of ICT in a meaningful manner within the preservation process. This was due to the participants not having a say in how ICT can be used or ICT guidelines to direct their work. As a result, participants skills were idled away as the wait continues for an ICT policy from the governmental and institutional level to guide the work regarding preserving Tonga's cultural heritage.

The absence of an administrative and legal framework to ensure the safeguarding of Tonga's heritage was a point of exasperation for participants. Additionally, the limited knowledge

concerning existing ICT policies led some participants to perceive that there was no policy in place. On the contrary, a small number of participants had knowledge of an ICT policy but were unable to recall its whereabouts. Despite these conflicting views on whether an ICT policy existed to guide participants' work, all participants did confer that an ICT policy is needed to preserve Tonga's heritage. Furthermore, an ICT policy could provide protection from exploitation and empower local Tongans partaking in the preservation process within their workplace.

4.2.3 Lack of Funding

During the data analysis process, the lack of funding for preservation projects was a narrative that emerged very strongly from all *talanoa* sessions. This current challenge either slowed or stifled the preservation process and in the view of participants was a significant hurdle.

'Ohai who archives some of Tonga's most dated records, comments on how long it takes to seek funding in order to begin the digitisation process. She states that the digitisation project has sought funding from donors for the last two to three years and is currently still seeking, "...it's about two or three years we are still looking for funding". Financial assistance was sought from JICA (Japan International Cooperation Agency), Australia and New Zealand, but so far, has been unsuccessful. 'Ohai comments that the difficulty lies in donors prioritising funds based on their perception of where the biggest need is in Tonga, for instance, educational reform and upgrading of the wharf for domestic transport. Lupe explains that donors are not interested in investing in cultural heritage preservation in Tonga, "It's not something that donors are interested in. They are interested in building wharves and palaces but not in this kind of exercise". In the case of the book project Lupe was involved in, the project team approached countries such as Australia and New Zealand for funding support; however, were unsuccessful.

Additionally, Sione states that resources in the form of financial support are a significant obstacle when attempting to undertake preservation projects, "The biggest thing that stops us is resources. We don't have the money to achieve all that we are doing. That's why we apply for a project to get the money". Regardless of the challenge of funding, Sione was still supportive of preservation initiatives. Sione regarded these initiatives as a valuable contribution to the efforts of prolonging and maintaining the Tongan cultural identity. Likewise, Lisiua asserts that funding is a problematic hurdle to overcome when preserving cultural heritage in Tonga. "A lot have agreed that it is an important initiative to document our history and stories via films. One major hurdle will always be that there is no local funding that would allow these visions to happen", Lisiua laments. In the case of Lisiua, strategies concerning the preservation of historical accounts and traditional stories require funds to implicate digital technology in the process.

Similarly, Lupe mentions the challenge of financial aid when undertaking preservation projects. In Lupe's case, she had been involved in many projects in which finance had been a contributing

factor to the project not succeeding to its fullest potential. For example, Lupe was involved in a book project detailing Tongan traditional knowledge in the Tongan language. However, due to financial limitations to print a substantial number of books, only a certain number were published. As a result, no books have been distributed and sold, therefore, not reaching many Tongans locally and in the diaspora. As such, if preservation in analogue form is a challenge due to funding, then digitising books is a concept that most Tongans such as Lupe may not perceive as a viable option. This is connected to reasons such as a lack of funding to purchase and implement ICT tools, and also the necessary training to equip people to be able to maintain the ICT product in place.

Responses by participants to the question, “how is digital technology used in the process of preserving cultural heritage?” all circled back to the challenges of accessing funds. Participants felt exasperated with the challenge of seeking funding, however, were determined to continue their pursuit, motivated by the passion for their cultural roots.

4.3 Bottom-up initiatives for Preserving Cultural Heritage

In spite of the challenges experienced by participants, I found that small ICT initiatives are being implemented by individuals to preserve cultural heritage. Such initiatives are not bound to a hierarchy or a position. Therefore, individuals can be proactive and take the initiative without violating the hierarchical norms which are very important in the Tongan culture. Tongans generally would not act against the instructions of their superior as they respect their authority. Table 4.3 provides an outline of the iterative analysis process for theme three: Local Tongans are preserving heritage outside of their workplace and personal funds. These two codes formed theme three.

Table 4.3: Coding of Bottom-up Initiatives for Preserving Cultural Heritage

Codes	Theme Three
Local Tongans are preserving heritage outside of their workplace Personal funds	Bottom-up Initiatives for Preserving Cultural Heritage

In Tonga, there are grass roots initiatives such as The Nuku'alofa Film Festival initiated in 2015, to recount Tongan and Samoan myths encouraging storytelling through film making. The festival has evolved to include films on current issues, such as climate change, and has provided an excellent platform for cultural preservation. For instance, video technology encourages the preservation of cultural roots between these two countries. Lisiua draws on her personal experience of partaking in grass-roots initiatives to preserve heritage.

“But nevertheless, we at the (pseudonym initiative) believe that it will take time. There are a few of us, working little odd jobs in films to make ends meet and at the same time plan to pursue this important vision”, Lisiua.

Social media platforms such as Facebook, are other interactive platforms used by initiatives to disseminate Tongan culture. For example, the Facebook page, ‘Fale a Matapule’, emphasised in the introduction section, provides traditional knowledge of events and stories associated with these events, and ensures its accuracy through online discussions. Furthermore, the video sharing platform, YouTube, was recognised by the participants as a suitable tool to publish and broadcast their knowledge, their experiences and their handicrafts to a wide audience. Lisiua makes the following comment:

“There are so many ways I think we can use to preserve our culture digitally. Not only through films but also protecting them online. In the forms of a website, on YouTube etc. I was lucky to have been funded by ICHCP (Intangible Cultural Heritage for Asia Pacific) in 2016 to make a short documentary on the making of our fine mats KIE. This short video is available on YouTube, and I think it is important for students to learn about the knowledge developed by our people on how to make these beautiful fine mats. In 2016 I made a very short film with Coconet on "How to tau'olunga" [How to perform traditional Tongan dance], which shows some very basic tau'olunga movements. Again, it is available on YouTube”.

Also, families are actively engaged in the preservation process as identified by Sione. Often, their goal is to safeguard their family roots, and they do so by recording oral stories about their family genealogies and traditional songs, dances, and stories using video cameras and smartphones. Kepu explains that his daughter records conversations with family members, including himself, regarding genealogy and historical accounts, passed down from previous generations and traditional stories using her phone and a camera. Tangi also advised that he travels Tonga collecting traditional information from the seniors using a Canon 7D camera. Although Tangi performs these tasks as part of his employment, he commented that he also records traditional and historical stories for his personal use and knowledge.

It became apparent that local Tongans are engaging in the process of preserving cultural heritage using ICT. This insight indicates that local Tongans are conscious of the need to conserve their cultural heritage and are utilising ICT to do so.

The participants often funded the cultural preservation projects themselves. Lupe self-funded the essential items and services for her two preservation projects “Because when we printed the first edition ah it was \$150pa’anga for 200 books only. And then that was worked largely mostly out of our pockets”. The publication of the book was largely self-funded by Lupe and the project team. In addition, Lupe and her team hired a lawyer they partly self-funded, to write a petition for a heritage case they were seeking to preserve.

“We hired a lawyer to ah for preparing our brief to send to the palace and to the ombudsman. We had to pay her out of our pockets. Nearly \$2000. So, it’s that kind of thing that disheartens me. I am now retired I don’t have that kind of money to throw around anymore”, Lupe.

What became clear during the *talanoa* with Lupe, is the importance of Tonga's cultural heritage for the cohesive and harmonious functioning of Tongan society. This strong belief held by Lupe was the motivation behind using her personal funds for the projects that she was involved in. Code two, see table 3.1 – Using personal funds strongly illustrates what local Tongans are prepared to do to preserve their cultural heritage. In the case of Lupe, she had been privileged in Tongan society with leadership roles which allowed her to have a generous income which she used to self-fund preservation projects. However, in the case of many local Tongans, this is not the case.

In spite, of the lack of funding, local Tongans are still engaging in bottom-up initiatives for preserving cultural heritage and are using different functionalities such as the voice recording and camera functions of their smartphones.

4.4 Summary

The findings of this study weave a narrative of hope, determination, and initiative. However, they also tell a story of the many challenges that one needs to overcome in Tonga, in order to use ICT meaningfully in the process of preserving cultural heritage. The participants often spent more than the allocated 45 minutes *talanoa* time, which indicates their interest and also the level of concern that these participants have for safeguarding their heritage.

Chapter 5: Discussion

The goal of this research study was to explore how digital technology is utilised in the process of preserving cultural heritage in Tonga. As a result, twelve participants' responses were analysed for patterns and this led to the three key findings in the previous chapter. The results indicate that ICT is an option for cultural heritage preservation in Tonga; however, local Tongans are met with challenges that can be navigated through bottom-up initiatives. Therefore, I will conceptualise the findings and discuss these in this chapter. The three key points I will discuss are as follows: Culture influences the use of ICT, challenges are prevalent in Tonga, and emerging initiatives.

5.2 Culture Influences the Use of ICT

The results confirmed my expectations that culture would play an important role in how digital technology is used in the process of preserving cultural heritage in Tonga. As such, based on the findings of this study, I determined that the Tongan people place value in their culture and accommodate it when using ICT to preserve their cultural heritage. This is due to strong cultural connections that are strengthened by practising traditional art forms, passing down traditional knowledge and genealogy, and engaging in traditional forms of storytelling like kava circles and books.

Therefore, applying an embeddedness lens, I propose that Tonga's strong culture influences how digital technology is used to preserve cultural heritage in Tonga. This aligns with the social embeddedness discourse that asserts exploring and understanding the social conditions of an environment to interpret its relationship with technology from the perspective of local people (Avgerou, 2008). In this study, Tonga's culture plays an influencing role in how ICT is utilised in the process of preserving cultural heritage. The culture is guided by espoused values and beliefs that are visible in the local people's behaviours. For instance, such behaviours include respecting elders and those in higher positions of power and ranking. In this section, I will elaborate on culture which takes into consideration language, beliefs, values, and behaviours.

Culture as an influencing factor of ICT use comes as no surprise, as Oceanic nations are known to be loyal to their land and culture and would not give the importance placed on culture up so quickly (Olutimayin, 2002). Tonga is no different, as it adheres very firmly to the customs and traditions of its culture (Tu'ivakano et al., 2016). As such, belief and value systems are embedded in Tonga's customs and traditions that are still strongly practised, even by families who have migrated from Tonga. Therefore, the use of ICT in Tonga is done so in the context of a Tongan cultural frame which considers hierarchy and behavioural norms underpinned by the four golden pillars: *loto to* (humility); *faka'apa'apa* (respect), *mamahi'i me'a* (commitment) and *tauhi vā* (reciprocity and maintaining of relationships).

According to Olutimayin's (2002) study, culture and IT compete for the position of importance and power, but both are interconnected and that "culture and IT in the South Pacific, as in the rest of the world, need to function together and should be prepared to accept one another as partners-in-progress" (p. 13). Considering the importance that the Tongan peoples place on culture, Olutimayin's suggestion is valid as Tonga's ICTs are intertwined with culture. As a result, any IS innovation would also be intertwined with culture. While IS innovation is yet to be understood and explored in Tonga, the notion of innovation is not new. For instance, Burley's (1996) study comments on Tonga's highly complex traditional chiefdoms. This complex monarchical regime constructed systems that have carried Tonga's traditions for centuries and ensured its independence. This example illustrates the Tongan people's innovative spirit to create systems of meaning and understanding that are socially shared and adhered to. Furthermore, some of the Tongan participants considered the knowledge of crafting *kalias* (canoes) and the navigating of the *moana* (ocean) as technology in its time.

The interpretation above correlates with Dobryakova and Kotelnikova's (2015) study, that suggests that solving problems is not just technical and that "economic, social, political, or indeed cultural considerations come into play only at a later stage," (p. 8). In the case of Tonga, cultural elements are considered along with ICT components when addressing the preservation of cultural heritage. Dobryakova and Kotelnikova (2015) asserts that "Such heterogeneity and complexity, which everyone agrees is present at the end of the process, are not progressively introduced along the way. They are present from the beginning", (p. 8). The quote from these two authors supports my interpretation that culture is important to the Tongan people's everyday interaction with each other as well as with digital technology. For example, an employee would engage ICT in the workplace according to directives from his or her manager, and this would impact the way the ICT tool is used or not used.

Therefore, to answer the research topic, "how is digital technology used in the process of preserving cultural heritage in Tonga?" I determined that culture influences the way ICT is used or not used in Tonga.

5.2.2 The Implications of Culture Influencing ICT: Preservation is a Fusion of Traditional and Modern Methods

The results build on existing evidence of the relationship between culture and digital technology. In Tonga, I determined that the influence that culture had on ICT led to the fusion of traditional and modern methods for the preservation of cultural heritage. Fusion refers to the utilisation of both traditional methods and ICT as an option for safeguarding artefacts. The fusion happened by way of a single or multiple preservation projects occurring at the same time and using either ICT or traditional safeguarding methods. Traditional safeguarding methods include oral storytelling

(Olutimayin, 2002), memorisation, written language and books (Tu'ivakano et al., 2016). One of the participants informed me that these methods had carried the traditions of Tongan society for generations before technology as we know it today arrived. Accordingly, Sanga's (2004) study associates these traditional methods for preserving culture with Oceanic cultures. Not unique to Tonga, these methods can also be found used by other indigenous cultures.

Having used a social embeddedness lens (Avgerou, 2008) to view my research under, I found that participants valued traditional methods of preservation in the Tongan context. It is essential to consider this factor in the culture and ICT relationship, in order to understand the role of ICT in the preservation process from the perspective of local Tongans. According to Avgerou (2008), IS innovation is a local social construct that arises out of local problems that local people accommodate and make sense of. For instance, in Tonga, local problems in the past have resulted in technological innovation to its sailing methods, and also with its preservation process with the written documentation of traditional knowledge systems.

The evolving of technology is a nonlinear process and is captured by a Tongan concept emphasised by one of the participants: *fofoa'i* (to birth something new). This particular participant referenced *fofoa'i* in relation to technology and suggested that technology that is now considered traditional technology has a place among new technology. Furthermore, traditional technological methods of preservation are not redundant, but instead, can be a conduit for innovative technological methods.

Therefore, how is digital technology used in the process of preserving cultural heritage in Tonga? Based on the participant response, the findings and the interpretation of these findings, I found that digital technology is used simultaneously with traditional methods to preserve Tonga's cultural artefacts. Additionally, I applied a social embeddedness lens and found that the notion of utilising ICT as an option with traditional methods to preserve artefacts is meaningful to local Tongans and has evolved out of them accommodating their culture. This use of traditional and new technology by Tongans could be contributed to what Helu-Thaman (2008) states as cultural groups possessing "unique systems of perceiving and organising the world around them" (p. 249). The local Tongan peoples have accommodated ICT into their culture in a way that makes sense to them and their worldviews.

The data contributes clear understanding of the importance of culture to the Tongan people, that they are willing to use traditional methods that they are familiar with, and also new methods such as ICT that is relatively new to preserve their heritage. The Tongan proverb, *Kūkū kaunaka*, captures the essence of how much cultural heritage meant to the participants. *Kūkū* means to hold tightly, and *kaunaka* is the stick that one held onto when snaring the pigeon, during the ancient chiefly sport of *heu lupe* (pigeon snaring) (Māhina, 2004). This proverb captures the spirit of the Tongan peoples who hold on dearly to their cultural artefacts, and the *kaunaka* is symbolic of the

methods utilised. Participants are open to employing both traditional and ICT methods in the process of preservation, so long as cultural artefacts remain. The drive by participants to prolong their cultural heritage was demonstrated by the dedication that they showed to advocate and protect their heritage, despite the challenges they faced.

5.3 Challenges in Using ICT for Preserving Cultural Heritage are Prevalent

In line with previous studies showing the challenges developing countries face concerning ICT use, Tonga is no exception and faces also the same or similar challenges. These challenges include a lack of funding, IT training, strong leadership and ICT strategy. While ICT challenges are commonly experienced in Tonga by its local people, these challenges are not unique to Tonga nor are they new. Therefore, to answer the research question, “how is digital technology used in the process of preserving cultural heritage in Tonga?” I determined that ICT could be used more but this is prevented by challenges not unique to Tonga. As a result, the implication is that local Tongans are perceiving their leaders as not prioritising the preservation of cultural heritage. An interpretation of the challenges and a discussion of the implications follows.

5.3.1 The Potential of ICT Use is Prevented by Challenges not Unique to Tonga

The results showed that there are many challenges in Tonga that prevent local people from utilising ICT and imply that these challenges are unique to the local context. However, based on the findings of similar studies, these challenges are prevalent in other Oceanic nations too. Accordingly, Walsham and Sahay’s (2006) study describes challenges in developing countries as usually embedded in “issues of power, politics, donor dependencies, institutional arrangements, and inequities of all sorts” (p. 19). Tonga is not exempt from some of these issues that impede the flow of ICT use or hinder the potential for ICT to be used to its full capacity by its local people.

Based on the responses from the participants to the research question, I found that the use of ICT was restricted as a result of challenges such as a lack of funding, and a lack of policy. While there were some policy and funding, 75% of participants were unaware of an ICT policy, and 91.7% had not received funding for a preservation project that they were involved in. These numbers could be an indication of the majority of local Tongans, however, despite the staggering figures, these challenges are faced by a high number of developing countries around the world. Therefore, while the potential of ICT is prevented by challenges in Tonga, these are not unique. For instance, a study by Olutimayin (2002) focused on the South Pacific region and Chan Mow (2012) focused on Samoa, both highlighting policy and funding challenges with regards to ICT use.

Applying a social embeddedness lens to the Tonga context, I conferred that ICT is used more freely as a mode of technology to engage in activities such as information creation and communication online. In relation to the preservation of cultural heritage, local actors in Tonga

were engaged in creating stories related to traditional knowledge or communicating and sharing traditional knowledge with one another. These types of activities were found to be more prevalent on social media platforms like Facebook and YouTube, rather than in the workplace. Laudon's (2010: 2018) studies support the idea of ICT as an information creation and communication tool. Therefore, with regards to IS innovation, ICT is provoking innovation amongst local Tongans in which they are using online platforms to preserve their cultural heritage.

In Tonga, IS innovation is transpiring in the local cultural conditions of the Tongan people. The occurrence of IS innovation in Tonga is in line with Avgerou's (2008) study in which she suggests that IS innovation needs to occur in the local conditions of its user. In Tonga, the process of preserving cultural heritage using ICT such as the internet is an illustration of how the local Tongans applied ICT and in effect spurred on IS innovation. In the case of Orlikowski's (1996) study where she states that social innovation occurs as a result of institutional transformation based on how local actors make sense of it, I found this to be the case in Tonga. However, it is the lack of institutional transformation in the workplace that is leading to IS innovation rather than an actual transformation taking place.

5.3.2 ICT is Perceived by Local Actors as not a Priority for Leaders

An implication of the challenges impacting the preservation efforts in Tonga is that local actors perceived leaders or those in decision-making positions to not prioritise ICT for preserving artefacts, or not prioritise preserving heritage at all. In response to the research question, I identified that leaders play a significant role in how digital technology is utilised in the process of preserving cultural heritage in Tonga. However, there does need to be better and open communication from leaders to local actors on their priorities and how the preservation of cultural heritage fits their assigned agendas.

In the case of Tonga, the leadership role is embedded in cultural behaviours and norms that are embodied by the leaders. For instance, the adherence to hierarchy means that a leader would be held in reverence due to their status, therefore, would hold the decision-making power regarding ICT use. This often leads to top-down decision-making that leaves local Tongans who utilise ICT for preservation heritage, with little say on how it should or could be used. According to the Framework for Action on ICT for Development in the Pacific (FADIP, 2010) strong leadership is needed to ensure the full potential of ICT is realised. Therefore, as part of strong leadership to leverage ICT for preservation purposes, leaders in Tonga need to consider how they are engaging and communicating with local Tongans about the preservation of cultural artefacts. In addition, local Tongans with the appropriate IT skills should be part of the decision-making process when formulating an ICT strategy and guidelines in the workplace.

Decision makers may not necessarily share with employees in their workplace the factors contributing to a lack of funding or policy, such as foreign donors and their potential agendas. Furthermore, the reasons for choosing to not share confidential and private information are valid and it may be in the best interest of an organisation not to. However, if overseas donors determine the allocation of their funds and view cultural heritage as not a priority, this may not be communicated appropriately to local actors by leaders. This may result in leaders potentially being perceived as not prioritising heritage. This assumption by the participants is not necessarily unwarranted but it does need further investigation to determine its probability. Applying a social embeddedness lens with which to view the Tongan context helped me to understand the relationship between people and ICT. As such, I employ that in Tonga, leaders in the workplace should provide better communication to their employees regarding donor agendas and their priorities to its employees, to mitigate any perception of ignoring ICT and preserving heritage. Amongst the local people of Tonga, there is a sense of a lack of direction from leaders which ties into a perceived lack of leadership. Chan Mow (2014) suggests that a lack of direction from leaders affects ICT projects. Therefore, in the case of Tonga, to avoid a perceived lack of direction and leadership, those in decision-making positions would benefit from communicating with local Tongans about preservation projects.

The previous suggestion aligns with Hau'ofa's (1994) holistic view of Tongan culture, in which things are seen in the totality of their relationship. This notion of holism applied to the workplace and its guide of communication could prevent the misunderstanding and false perceptions of a lack of prioritisation towards ICT to preserve cultural heritage. Providing clear and relevant communication regarding any factors contributing to the cultural heritage process is essential. This clarity engages the local Tongans' world view and thereby, supports their understanding of why cultural heritage does not appear to be a priority for those holding leadership roles. It leads to potentially decreasing the misconceptions regarding ICT use or its lack of use and instead aligns with Helu-Thaman's (1995) notion of community interconnectedness across Oceania.

5.4 Emerging Initiatives in Tonga

To answer the research question, "how is digital technology utilised in the process of preserving cultural heritage in Tonga?" I determined that emerging initiatives in Tonga entail bottom-up approaches to preserving cultural heritage that foster IS innovation. Bottom-up initiatives provide an environment that is not as culturally regulated with hierarchies and behavioural norms, for example, behaviours such as not questioning leaders for fear of appearing disrespectful. As a result, local Tongans engaging in bottom-up initiatives to safeguard their heritage are freer to try new technologies such as video and camera, and also to utilise traditional methods in the preservation process. Therefore, in Tonga, the act of preservation is more important than the methods and processes of preservation. In this section, I will discuss how Tongans are passionate

about preserving their cultural heritage, and the implication of this passion in the transpiring of IS innovation in offline and online environments.

5.4.2 The Act of Preservation is More Important than the Methods and Processes of Preservation

From my findings, I conferred that in preservation efforts, Tongans found meaning in the actual preserving of artefacts rather than the method or process of preservation. The meaning local actors assigned to the act of preservation correlates with a strong passion towards their culture. The passion and value that local Tongans have towards the safeguarding of their cultural artefacts are captured in the Tongan proverb, *pukepuke 'a fufula*, which, translated to the English language, means great effort is equally required for greater deeds. This proverb is often used in reference to the preservation of the traditions of the land (Māhina, 2004). *Pukepuke* means to hold on to, and when I asked participants the question: “how is digital technology used in the process of preserving cultural heritage in Tonga?” I conferred that local Tongans used ICT as an option to preserve artefacts in any way possible as a means of holding onto their heritage. Local Tongans were leveraging ICT as an option in an act of preserving artefacts because they valued their heritage, rather than being focused on methods or processes of preservation. Whether this was through mediums such as video and camera or via social media platforms using Facebook and YouTube, the act of preserving was essential.

As a result of focusing on the act of preservation rather than the methods or processes, the preservation efforts are uncoordinated and unorganised. Although the intention of local actors is good, the long-term effects may otherwise not be. The result of this lack of coordination is highlighted in Chan Mow’s (2014) study focusing on Samoa where he states that “...better coordination of ICT interventions is needed to ensure that efforts are not duplicated and that limited resources are wisely utilised”, (p. 6). In Tonga, a concerted effort to coordinate ICT preservation projects would provide insight into what preservation projects are taking place. These insights can facilitate knowledge shared amongst the various initiatives and as such, funding and skills can be utilised more effectively. For example, how one initiative is preserving traditional knowledge using ICT may benefit another group who are looking to undertake the same activities. Knowledge share between the two groups can stimulate innovation, enable better decision-making and reduce errors and costs associated with it.

With regard to ICT use, local Tongans are engaging with various ICT tools that are enabling the preservation process to take place. Common ICT tools that are being utilised are the smartphone and the internet. These two popular tools in Tonga are being used to communicate traditional knowledge and in doing so prolonging elements of Tonga’s cultural heritage. Despite digital technology opening up the ICT human capacity to explore new methods of preservation through

technology, it is also perpetuating the coordination challenge highlighted in the previous paragraph.

Essentially, local Tongan individuals are engaging in bottom-up initiatives in the community and within their homes. These two environments were seen to be much different from the workplace setting. Workplace environments compared to bottom-up initiative settings were more conformed to the cultural norms governing work relationships within the workplace in Tonga. For example, the power dynamics and hierarchy that exist in the workplace of the participants of this study were not visible in relationships of those involved in bottom-up initiatives. However, bottom-up initiatives in Tonga provide a space where a more collaborative, ICT stimulated, and less hierarchical approach was adopted. As a result of this different approach towards safeguarding Tonga's cultural heritage, bottom-up initiatives provide an environment where participants do use ICT to safeguard Tonga's heritage.

5.4.3 IS Innovation is Occurring in Bottom-up Initiatives

The implication of local Tongans utilising ICT as an option for preservation is that IS innovation is found to be occurring in bottom-up initiatives. As a result of these bottom-up initiatives, social change is transpiring, and local Tongans are empowered to preserve their artefacts in ways that they find meaningful and valuable. The social change that is taking place regarding the preservation of cultural heritage is occurring in two types of environments: offline and online. Dobryakova and Kotelnikova (2015) state that for technologies to be implemented and used to their full potential, their social boundaries must be compatible with the existing boundaries of the institutions using them. In the case of Tonga, the institution is the bottom-up project. Therefore, the social boundary rests within communities of people who choose to come together and utilise ICT to preserve their artefacts, setting the boundaries for how they work with one another.

Furthermore, ICT use in Tonga occurs in two environments during bottom-up projects, either online or offline and often cross over. For instance, the Nuku'alofa Film Festival preserves traditional knowledge through storytelling using various ICT devices and infrastructure – Internet, video camera, camera, computer for editing, audiovisual equipment for screening the films and microphones and sound equipment. Also, the festival showcases a live viewing of films in a physical location. Both offline and online environments operate simultaneously, and individuals are more likely to be embedded in using ICT. Applying a social embeddedness lens, I observed that participants value the internet as a vehicle to communicate and share knowledge. I attributed this finding to the social embeddedness lens because the local actors engaged meaningfully with the internet and from their perspectives found it valuable in the process of preserving their cultural heritage. This includes the simultaneous use of traditional methods and ICT in the preservation

process, and participants moving outside of their cultural obligations to work in bottom-up initiatives that provide a more collaborative and open way of working.

Accordingly, Laudon and Laudon (2018) cite that the internet connects millions of networks in 230 countries and it is globally the most extensive and most widely used network for communication and sharing of information. Embedded in bottom-up initiatives is the value of the internet as a meaningful tool, and ICT devices as powerful to utilise in the process of preserving cultural heritage in Tonga. For instance, various Facebook pages have been set up to share traditional knowledge and YouTube accounts to upload videos for the same purpose. I contend that what is occurring is an innovative relationship between the social aspects of Tonga's culture and technology within this environment. As a result, IS innovation is materialising in Tonga through bottom-up initiatives.

One of the implications of ICT that is currently occurring in Tonga is social innovation activated in online environments as opposed to rigid institutional structures. Orlikowski (1996) states that social innovation is based on institution transformation due to how local actors make sense of it. In the case of Tonga, how participants have made sense of ICT has not led to the transformation of the institution but rather the transpiring of bottom-up initiatives. Avgerou's (2008) study emphasises that local problems and their causes are determined by how the local peoples make sense of them. In the case of Tonga, bottom-up initiatives as a means of preserving cultural heritage have evolved out of local actor's sense-making.

Avgerou (2008) affirms that the IS innovation process is "an adaptation to local social conditions" (p. 133). In the case of Tonga, the local people have adapted the IS innovation process to fit the cultural constructs they live within. Therefore, how is digital technology used in the process of preserving cultural heritage in Tonga? I propose that local Tongans are using ICT to contribute towards the preservation of heritage but through bottom-up initiatives which permit innovative behaviours that allow for IS innovation to take place in both an online and offline environment. In this section, I will discuss the offline environment.

The offline environment refers to all bottom-up initiatives that are taking place in the community and outside of the workplace. For instance, in the home and community-based startups and advocate groups with the purpose of preserving cultural heritage using ICT as an option. The increased availability of ICT tools to the local actors by way of smartphones, digital cameras, tablets and laptops raises the chance of ICT being used as an option to preserve cultural artefacts. In addition, amongst the younger Tongan generation, there is an increased awareness of preserving heritage, made easier with regular connectivity to the internet.

5.5 Summary

In summary, there are emerging initiatives that are a result of IS innovation transpiring in Tonga. Furthermore, what is meaningful from the perspective of local actors is the act of preservation rather than the tools and processes of preservation. This act is contributing to IS innovation occurring in bottom-up initiatives both in online and offline environments. The reason for this phenomenon is that participants who engage in bottom-up projects liberate themselves from certain cultural constructs, like hierarchy, that others employed in organisations across Tonga were not able to. This liberation enables local Tongans to take proactive measures towards preserving heritage. Hence, bottom-up initiatives are an option that needs further investigating and support, in order to provide more avenues for local Tongans to be able to preserve their artefacts.

Chapter 6: Conclusion

The aim of this study was to explore how digital technology is utilised in the process of preserving cultural heritage in Tonga. The findings were similar to those highlighted in literature of other developing oceanic nations, such as Samoa and Fiji, as related to ICT implementation and development. Although the aims of the literature studies slightly differed to that of this study, they served as meaningful examples to draw on, considering the lack of literature in Tonga on ICT use for preservation purposes. Drawing on information from these nations helped me understand how ICT was currently used in Oceania and perhaps how it can be employed in Tonga to preserve heritage. Furthermore, it helped me understand that the challenges experienced by participants in Tonga were not unique but seem to be a pattern amongst developing nations in general.

The findings in this study discussed three themes: Perceptions of cultural heritage and preservation, existing challenges that affect the preservation of cultural heritage in Tonga and bottom-up initiatives for preservation. Through formal and casual *talanoa* sessions with twelve participants and then a thematic analysis of the data collected, I found that in Tonga, ICT is considered an option in conjunction with traditional methods for preserving cultural artefacts. Applying a social embeddedness lens to the landscape of Tonga I identified that the participants accommodated their culture in their work environment. This accommodation of the culture was more flexible in community-based environments. Cultural conditions applied to the participants' workplaces and played a role in the use or lack of use of ICT. For instance, the hierarchical structure of Tonga's society informed relationships within the workplace, that often impeded the use of ICT. However, out of the environment Tongans are found to be engaged in bottom-up initiatives as a means to preserve their cultural roots. I found that better support was required to maintain and promote bottom-up initiatives as meaningful ways that local Tongans can engage in the process of preservation.

Cultural assumptions and values played a significant part in how local Tongans utilise or don't utilise ICT with regards to preserving heritage. Evidently, leadership and direction emerged as important to the ICT strategy in Tonga and further research into this aspect of the Tonga society would benefit the country and organisations. Further research is required to explore the role of leadership in Tonga and how it relates to the preservation of heritage.

References

- Abd Manaf, Z., & Ismail, A. (2010). Malaysian cultural heritage at risk?: A case study of digitisation projects. *Library Review*, 59(2), 107–116. <https://doi.org/10.1108/00242531011023862>
- Akpan, P. I. (2003). Basic-needs to globalization: Are ICTs the missing link? *Information Technology for Development*, 10(4), 261–274. <https://doi.org/10.1002/itdj.1590100405>
- Ashraf, M. M., Swatman, P., & Hanisch, J. (2007). *Some Perspectives of Understanding the Adoption and Implementat.* 3(4), 1–12.
- Avgerou, C. (2008). Information Systems in Developing Countries: A Critical Research Review. *Journal of Information Technology*, 23(3), 133–146. <https://doi.org/10.1057/palgrave.jit.2000136>
- Avgerou, C. (2010). Discourses on ICT and Development. *Information Technologies & International Development*, 6(3), 1–18.
- Bada, A. O. (2002). Local Adaptations to Global Trends: A Study of an IT-Based Organizational Change Program in a Nigerian Bank. *The Information Society*, 18(2), 77–86. <https://doi.org/10.1080/01972240290075011>
- Blake, J. (2000). On Defining the Cultural Heritage. *International and Comparative Law Quarterly*, 49, 61–85.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Burley, D. V. (1996). Sport, Status, and Field Monuments in the Polynesian Chiefdom of Tonga: The Pigeon Snaring Mounds of Northern Ha'apai. *Journal of Field Archaeology*, 23(4), 421–435. <https://doi.org/10.2307/530546>
- Chan Mow, I. T. (2014). Issues and Challenges, Strategies and Recommendations, in the development of ICT in a small island developing state: the case of Samoa. *The Electronic Journal of Information Systems in Developing Countries*, 63(1), 1–24. <https://doi.org/10.1002/j.1681-4835.2014.tb00447.x>
- Clark, G., Burley, D., & Murray, T. (2008). Monumentality and the development of the Tongan maritime chiefdom. *Antiquity*, 82(318), 994–1008. <https://doi.org/10.1017/S0003598X00097738>
- Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process.* Sage.
- Dobryakova, M., & Kotelnikova, Z. (2015). Social Embeddedness of Technology: Prospective Research Areas. *Foresight-Russia*, 9(1), 6–19. <https://doi.org/10.17323/1995-459X.2015.1.6.19>

- Eagleton, T. (2016). Culture and Civilisation. In *Culture*. Retrieved from <http://ebookcentral.proquest.com/lib/aut/detail.action?docID=4518781>
- Fa'avae, D., Jones, A., & Manu'atu, L. (2016). *Talanoa'i 'a e talanoa - talking about talanoa: Some dilemmas of a novice r...: Live*. 12(2), 138–150.
- Fale 'a Matapule. (2015, October 15). Fale 'a Matapule. Retrieved February 15, 2019, from Facebook website: <https://www.facebook.com/groups/1510992465878903/about/>
- Farrelly, T., & Nabobo-Baba, U. (2014). Talanoa as empathic apprenticeship. *Asia Pacific Viewpoint*, 55(3), 319–330. <https://doi.org/10.1111/apv.12060>
- Fiji Museum. (2018). Tongan influenced weapons. Retrieved January 30, 2019, from The Fiji Museum - Virtual Museum website: <http://virtual.fijimuseum.org.fj/index.php?view=objects&id=61>
- Fiji Museum. (n.d.). The Fiji Museum - Virtual Museum. Retrieved February 15, 2019, from Home website: <http://virtual.fijimuseum.org.fj/index.php#>
- Graburn, N. H. . (2001). Learning to consume: What is heritage and when is it traditional? In *Consuming Tradition, Manufacturing Heritage* (pp. 68–90). Retrieved from https://is.muni.cz/el/1423/podzim2009/SOC310/rd/bc/ctmh/chapter_3.pdf
- Gunson, N. (1990). The Tonga-Samoa connection 1777–1845. *The Journal of Pacific History*, 25(2), 176–187. <https://doi.org/10.1080/00223349008572634>
- Hancock, D. R., & Algozzine, B. (2017). Stages of doing case study research. In *Doing case study research: A practical guide for beginning researchers* (3rd ed., Vol. 1, pp. 15–73). Retrieved from <http://eds.a.ebscohost.com.ezproxy.aut.ac.nz/eds/ebookviewer/ebook/bmxlYmtfXzE0NjY5MzNfX0FOO?sid=592ba8c5-0f5b-404f-913e-03e07f288438@sdc-v-sessmgr02&vid=0&format=EB&rid=3>
- Hann, C. (2017). Economic Anthropology. In H. Callan (Ed.), *The International Encyclopedia of Anthropology* (pp. 1–16). <https://doi.org/10.1002/9781118924396.wbiea2194>
- Helu-Thaman, K. (1995). Concepts of learning, knowledge and wisdom in Tonga, and their relevance to modern education. *Prospects*, 25(4), 723–733. <https://doi.org/10.1007/BF02334147>
- Ikenberry, G. J., Kalathil, S., & Boas, T. C. (2003). Cracking up and cracking down in Singapore, Vietnam, and Burma. In *Open Networks, Closed Regimes: The Impact of the Internet on Authoritarian Rule* (Vol. 82, p. 158). Retrieved from <https://www.jstor.org/stable/10.2307/20033442?origin=crossref>

Internet worlds statistics. (2018, June 30). World Stats. Retrieved February 16, 2019, from Internet users in the world by the regions - June 30, 2018 website:

<https://www.internetworldstats.com/stats.htm>

Kaeppler, A. L. (1971). Rank in Tonga. *Ethnology*, 10(2), 174–193. <https://doi.org/10.2307/3773008>

Laudon, K. C., & Laudon, J. P. (2018). PART ONE organisations, management, and the networked enterprise. In *Management information systems - Managing the digital firm* (Fifteenth, pp. 30–50). Retrieved from

<http://eds.b.ebscohost.com.ezproxy.aut.ac.nz/eds/ebookviewer/ebook/bmxlYmtfXzE1OTQ0ODBfX0FO0?sid=b1dfc49e-863a-41ef-98d3-7cf20353c20c@sessionmgr101&vid=12&format=EB&rid=8>

Leidner, D. E., & Kayworth, T. (2006). Review: A Review of Culture in Information Systems Research: Toward a Theory of Information Technology Culture Conflict. *MIS Quarterly*, 30(2), 357–399. <https://doi.org/10.2307/25148735>

Māhina, H. ‘Okusitino. (2004). *REED book of Tongan proverbs - Ko e tohi 'a e REED ki he lea Tonga heliaki*. Auckland: REED Books.

Māhina, H. ‘Okusitino. (2008). From Vale (Ignorance) to ‘ILO (Knowledge) to Poto (Skill) the Tongan Theory of Ako (Education): Theorising Old Problems Anew. *AlterNative: An International Journal of Indigenous Peoples*, 4(1), 67–96. <https://doi.org/10.1177/117718010800400108>

Merriam, S. B., & Tisdell, E. J. (2016). How ethical considerations relate to the trustworthiness of qualitative research. In *Qualitative Research: A guide to design and implementation*. (4th ed.). Retrieved from

<http://eds.b.ebscohost.com.ezproxy.aut.ac.nz/eds/ebookviewer/ebook/bmxlYmtfXzEwMjI1NjJfX0FO0?sid=8988c13f-4313-4192-8f96-057d8de9f2fe@sessionmgr101&vid=5&format=EK&rid=12>

Ndou, V. D. (2004). E - Government for Developing Countries: Opportunities and Challenges. *The Electronic Journal of Information Systems in Developing Countries*, 18(1), 1–24. <https://doi.org/10.1002/j.1681-4835.2004.tb00117.x>

New Zealand Ministry of Foreign Affairs and Trade. (2018). Cyclone Gita – New Zealand Response [Ministry Website]. Retrieved March 22, 2019, from New Zealand Ministry of Foreign Affairs and Trade website: <https://www.mfat.govt.nz/en/aid-and-development/disaster-and-humanitarian-aid/cyclone-gita-new-zealand-response/>

- Olutimayin, J. (2002). Adopting Modern Information Technology in the South Pacific: A Process of Development, Preservation or Underdevelopment of the Culture? *The Electronic Journal of Information Systems in Developing Countries*, 9(1), 1–12. <https://doi.org/10.1002/j.1681-4835.2002.tb00053.x>
- Orb, A., Eisenhauer, L., & Wynaden, D. (2001). Ethics in Qualitative Research. *Ethics in Qualitative Research*, 4.
- Orlikowski, W. J. (1996). Improvising Organizational Transformation Over Time: A Situated Change Perspective. *Information Systems Research*, 7(1), 63–92. Retrieved from JSTOR.
- Prescott, S. M., & Hooper, K. C. (2009). Commons and anti-commons: Tongan business experiences in New Zealand. *Pacific Accounting Review*, 21(3), 286–303. <https://doi.org/10.1108/01140580911012511>
- Rose, G., & Straub, D. (1998). Predicting General IT Use: Applying TAM to the Arabic World. *Journal of Global Information Management (JGIM)*, 6(3), 39–46. <https://doi.org/10.4018/jgim.1998070104>
- Scotland, J. (2012). *Exploring the Philosophical Underpinnings of Research: Relating Ontology and Epistemology to the Methodology and Methods of the Scientific, Interpretive, and Critical Research Paradigms*. *English Language Teaching*, 5(9), 9-16. <https://doi.org/10.5539/elt.v5n9/elt.v5n9p9>
- Silverman, H., & Ruggles, D. F. (2007). *Cultural heritage and human rights*. In *Cultural Heritage in a Globalized World*. Retrieved from 10.1007/978-0-387-71313-7_1
- Slevitch, L. (2011). *Qualitative and Quantitative Methodologies Compared: Ontological and Epistemological Perspectives*. In *Cultural Heritage in a Globalized World*. *Journal of Quality Assurance in Hospitality and Tourism*, 12, 73-81. <https://doi.org/10.1080/1528008X.2011.54180>
- Techera, E. J. (2011). Safeguarding cultural heritage: Law and policy in Fiji. *Journal of Cultural Heritage*, 12(3), 329–334. <https://doi.org/10.1016/j.culher.2011.02.002>
- The Heritage Foundation. (2019). Tonga. Retrieved February 23, 2019, from 2019 Index of economic freedom website: [//www.heritage.org/index/country/tonga](http://www.heritage.org/index/country/tonga)
- Tu'ivakano, 'Eiki Nopele, Fusitu'a, L. 'Eseta F., Taufe'ulungaki, D. 'Ana M., Havea, D. S., & 'Ilaiu, M. L. (2016). *Tonga: Fonua 'a Kāinga*.

- UNESCO. (2011). UNESCO - Intangible Heritage Home. Retrieved February 15, 2019, from The United Nations Educational, Scientific, and Cultural Organisation - Intangible Cultural Heritage website: <https://ich.unesco.org/en/home>
- Vaiolleti, T. M. (2006). Talanoa Research Methodology: A Developing Position on Pacific Research. *Waikato Journal of Education*, 12, 21–34.
- Walsham, G., & Sahay, S. (2006). Research on information systems in developing countries: Current landscape and future prospects. *Information Technology for Development*, 12(1), 7–24.
<https://doi.org/10.1002/itdj.20020>

Glossary

Tongan Term and Sentences	English Translation
Faikava	Kava circle
Faiva	Performance arts
Faka'apa'apa	Respect
Fa kavei Koula	Four golden pillars
Fe'ilongaki	To know of each other's place and identity
Fofoa'i	To birth something new
Heu Lupe	Pigeon snaring
Kalia	Tongan canoe
Kiekie	Women's traditional waist garment
'Koe 'Otua mo Tonga ko hoku tofi'a	God and Tonga are my inheritance
Kūkū Kaunaka	Holding the pigeon-snare's handle tightly
Kupesi	Tongan traditional Patterns
Loto to	Humility
Maheni	Familiarity
Mamahi'i me'a	Loyalty
Moana	Ocean
Ngāue loto taha pe	Work in one accord
Nima'mea'a	Fine arts
Ngatu	Tapa cloth
'Otu langi 'i Lapaha	Ancient tombs in the village of Lapaha
Poto he 'anga	Know the appropriate relational norms
Pukepuke 'a fufula	Great effort is equally required for greater deed
Tauhu va	Reciprocity/maintaining relationship
Tonga 'Eiki	The main island of Tonga
Tufunga	Material arts

Auckland University of Technology Ethics Committee (AUTEC)

Auckland University of Technology
D-88, Private Bag 92006, Auckland 1142, NZ
T: +64 9 921 9999 ext. 8316
E: ethics@aut.ac.nz
www.aut.ac.nz/researchethics

APPENDIX ONE: Ethical Approval

17 September 2018

Antonio Diaz Andrade
Faculty of Business Economics and Law

Dear Antonio

Re Ethics Application: **18/330 An exploration on the use of digital technology for preserving cultural heritage in Tonga**

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC).

Your ethics application has been approved for three years until 17 September 2021.

Standard Conditions of Approval

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

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

AUTEC grants ethical approval only. If you require management approval for access for your research from another institution or organisation, then you are responsible for obtaining it. If the research is undertaken outside New Zealand, you need to meet all locality legal and ethical obligations and requirements. You are reminded that it is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard.

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

Yours sincerely,



Kate O'Connor
Executive Manager
Auckland University of Technology Ethics Committee

Cc: anaumesuihenry@gmail.com; anau.henry@aut.ac.nz; Lena Waizenegger

APPENDIX TWO: Participant Information Sheet

Date Information Sheet Produced:

14 September 2018

Project Title

An exploration on the use of digital technology for preserving cultural heritage in Tonga.

An Invitation

Malo'e'lelei,

My name is 'Anau Mesui and I am studying towards a Master of Business specialising in Information Systems at the Auckland University of Technology (AUT), New Zealand. I am Tongan born and raised in New Zealand and have a strong interest in the field of digital technology and cultural preservation in Tonga.

The preservation of cultural heritage is imperative to the identity of a society and the safeguarding and maintaining of ancestral roots. Inevitably this shapes the way we live today and informs decisions for the future of a society. I will be the primary researcher on this project with the supervisory support of Associate Professor Antonio Diaz Andrade and Dr Lena Waizenegger.

Due to your knowledge in the field of the preservation of cultural heritage and/or digital technology in Tonga, I would like to invite you for an interview session in the form of a talanoa to get your insights and opinion on the topics at hand. This research will contribute to the completion of my Masters of Business (MBUS) at AUT. I would very much appreciate your participation.

What is the purpose of this research?

The purpose of this research is to explore how digital technology is implicated in the process of cultural heritage preservation in Tonga. I want to explore the current state of the use of digital technology in Tonga, what types of digital technologies are Tongans in Tonga utilising, ideas on the preservation of cultural heritage, the process of cultural heritage preservation and what are the benefits and challenges in preserving cultural heritage using digital technology. The findings of this research project may result in the following outputs: a dissertation, a research paper, a journal article, a conference paper, other academic publications or presentations.

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

You were identified as a potential participant as you are a senior official or hold a leadership, or management role at a group within the Tongan community that actively engages in the preservation of cultural heritage, and/or engages in digital technology and have an influence on how and what kind of digital technology is implemented and used. There are four groups that have been selected to recruit participants from due to their knowledge and engagement with digital technology and cultural heritage, and you are a key member of one of these four groups.

For transparency reasons any potential conflicts of interest will be identified in the interview.

Your contact details were attained from the internet or through referral by another expert or member of the Tongan community.

How do I agree to participate in this research?

Your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will neither advantage nor disadvantage you. You are able to withdraw from the research at any time. If you choose to withdraw from the research, then you will be offered the choice between

having any data that is identifiable as belonging to you removed or allowing it to continue to be used. However, once the findings have been produced, removal of your data may not be possible.

Before the interview begins you will have been a two week time frame to decide whether you would like to be identified in this research proposal. The option to be identified or not identified will also be available during and after the interview in the case you change your mind.

You can participate in this research by signing the consent form which has been attached along with this participant information sheet.

What will happen in this research?

The talanoa will take between 45 minutes to an hour and will be conducted face-to-face in Tonga on a date and time of your convenience. The talanoa will be conducted in the English language. During the talanoa, I will ask you questions which will be categorised as follows: a) The current state of digital technology use and of preserving cultural heritage in Tonga, challenges and benefits and potential future improvements if any, b) what is the process for the preservation of cultural heritage in Tonga and the benefits and challenges of this process?, c) how points (a) and (b) will benefit or not benefit Tonga and d) any further comments you want to provide in relation to how digital technology is used to preserve cultural heritage in Tonga.

What are the discomforts and risks?

It is highly unlikely that you will experience discomforts and this research puts you at risk. In any case, if you have any questions during the talanoa, please do not hesitate to ask me at any time. I will be more than happy to answer any questions you may have. I will respect your right if at any time you decide to withdraw from the talanoa. In addition, there will be no discomfort or risk as I speak both English and Tongan and as a Tongan I am accustomed to our Tongan protocols and culture.

What are the benefits?

The benefit of participating in this research is that your comments will help contribute to the advancement and development of the field of digital technology and cultural heritage in developing small island states such as Tonga. Furthermore, the wider Tongan community will benefit by gaining understanding on how digital technology can be used in the process of preserving cultural heritage, by first understanding how it is currently used. Additionally, your participation will contribute to any future aims of Tonga to improve the current use of digital technology to preserve cultural heritage. Lastly, your participation will help me with the completion of this research and enable me to obtain my MBUS from AUT successfully.

How will my privacy be protected?

Please note that all information you provide is used for research purpose only, specifically only for this research project. Your personal data like your name will be pseudonymised unless you advise me not to. However, please be advised that confidentiality might be reduced as the pool of potential participants in the field of this research topic is small. As a result, potential participants may know one another or members in the Tongan society may figure out who you are. Furthermore, if you choose to have the interview on the premise of your work place, confidentiality may be affected. As such you can choose to conduct the interview away from your work premise to provide further confidentiality.

What are the costs of participating in this research?

There is no cost associated to your participation in this research other than 45 minutes to an hour of your time.

What opportunity do I have to consider this invitation?

Please respond to this invitation within two weeks so that I can schedule the talanoa at a time and date of your convenience. The talanoa can take place in Tonga or New Zealand if you happen to be visiting New Zealand during the time leading up to or after the talanoa proposed period.

Any necessary follow up talanoa can potentially be conducted via skype or over the phone, depending on which communication method you are most comfortable with.

Will I receive feedback on the results of this research?

Yes, I will send you a one to two-page summary of my research findings prior to publication and ask you if you want to be identified as an expert in the publication.

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

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisors below:

Associate Professor Antonio Diaz Andrade, antonio.diaz@aut.ac.nz +64-9-921 9999 ext. 8572

Dr Lena Waizenegger, lana.waizenegger@aut.ac.nz +64-9-921 9999 ext. 5711

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

Whom do I contact for further information about this research?

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

Researcher Contact Details:

‘Anau Mesui
anau.henry@aut.ac.nz
27 St Paul Street, Auckland City
921 9999 ext. 8572

Project Supervisor Contact Details:

Associate Professor Antonio Diaz Andrade
antonio.diaz@aut.ac.nz
120 Mayoral drive
921 9999 ext. 5804

Dr Lena Waizenegger
lana.waizenegger@aut.ac.nz
120 Mayoral drive
921 9999 ext. 5711

Approved by the Auckland University of Technology Ethics Committee on *type the date final ethics approval was granted*,
AUTECH Reference number *type the reference number*.

APPENDIX THREE: Consent Form

Consent Form

Project title: ***An exploration on the use of digital technology for preserving cultural heritage in Tonga***

Project Supervisor: ***Associate Professor Antonio Diaz Andrade & Dr Lena Waizenegger***

Researcher: ***Anau Mesui***

- ☐ I have read and understood the information provided about this research project in the participant information sheet dated 14 August 2018.
- ☐ I have had an opportunity to ask questions and to have them answered.
- ☐ I understand that notes will be taken during the interviews and that they will also be audio-taped and transcribed.
- ☐ I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without being disadvantaged in any way.
- ☐ I understand that if I withdraw from the study then I will be offered the choice between having any data that is identifiable as belonging to me removed or allowing it to continue to be used. However, once the findings have been produced, removal of my data may not be possible.
- ☐ I agree to take part in this research.
- ☐ I wish to receive a summary of the research findings (please tick one):
Yes ☐ No ☐
- ☐ I agree to be identified by name, position and/or title in the final output of this research project:
Yes ☐ No ☐

Participant's signature:

.....

Participant's name:

.....

Participant's Contact Details (if appropriate):

.....
.....
.....
.....

Date:

*Approved by the Auckland University of Technology Ethics Committee on **type the date on which the final approval was granted** AUTECH Reference number **type the AUTECH reference number***

Note: The Participant should retain a copy of this for m

APPENDIX FOUR: Interview Guideline

Interview guideline: Expert Interviews

First of all, thank you very much for participating in a talanoa with me today, I really appreciate it.

Introduce myself:

My name is Anau Mesui. I was born in Tonga and my father is Sione ‘Atia’i from Kameli, Vava’u. My mother Neanisi Mesui comes from Tatakamotonga and our family home is in Longolongo. I am very interested the phenomena of digital technology and it’s use in preserving cultural heritage in Tonga. Again, I just want to say a big malo ‘aupito for your willingness to participate in this talanoa with me today.

During the next 45 minutes to an hour I will ask you questions about your opinion and perspective on a) the use of digital technology in Tonga, b) the process of preserving cultural heritage in Tonga and c) how digital technology is and can be used in the process of preserving cultural heritage.

Cultural heritage is the legacy of our ancestors, it connects us with our own ancestral roots and shapes the way we live today. However, due to the pressures of globalisation, westernisation and migration especially in developing countries, our cultural heritage is threatened. Therefore, societies have started to use digital technologies to preserve their historical artefacts. Despite the importance of safeguarding our own roots, there is a lack of research that investigates the role of digital technologies in this process. This research will explore how people make sense and leverage digital technologies in developing countries in order to preserve their cultural heritage using Tonga as a case study.

Would you mind if I video or audio record the interview? Please note that all the information you provide are used for research purposes only. Your personal data like your name will be pseudonymised unless you want to be identified.

If you have any questions or concerns now or during the talanoa, please feel free to stop me and ask at any time.

1. May I ask you to provide some background information about yourself?
 - a. Do you want to be identified in this talanoa and in my research when it is ready to be published or do you want to remain anonymous?
 - b. How would you describe your professional role?
 - c. How long have you been working for the organisation that you are currently employed?
 - d. What is your background with regards to digital technology and/or preserving cultural heritage in general?
2. Many nations are starting or have started to look into preserving their cultural heritage.
 - a. What items or elements of the Tongan culture do you consider to be cultural heritage?
 - b. What do you think are the main reasons why nations preserve cultural heritage?
 - c. What are the benefits of preserving cultural heritage in Tonga?

Hints:

- Identity
 - d. What are the negatives of preserving cultural heritage in Tonga?
 - e. What are the challenges for preserving cultural heritage in Tonga?
 - f. How do you perceive cultural heritage being preserved in Tonga?
 - g. What items or elements of Tonga's cultural heritage do you consider to be at risk?
 - h. What factors are putting these items and elements at risk?
3. Digital technology is a growing trend in small island developing states such as Tonga. What are possible challenges for organisations or groups in Tonga when implementing digital technology?
- Hints:
- Implementation/maintenance costs
 - Technical challenges
 - Service quality
 - Customer satisfaction
 - Training staff
 - Skill set
- a. What are possible challenges for organisations or groups when using digital technology?
 - b. What are the benefits of using digital technology? Please provide an example of an organisation or group doing this in Tonga.
 - c. What types of digital technologies are being used in Tonga in general and what is it being used for?
 - d. Is digital technology being used effectively? If not how can it be used more effectively?
 - e. Is digital technology being used to preserve items or elements of Tonga's culture? If so, how? If not, why not?
 - f. How could digital technology be used in the process of preserving cultural heritage?
 - g. Who in Tonga is currently using digital technology to preserve cultural heritage?
4. How are digital technologies used in the process of preserving cultural heritage in Tonga?
- a. What items or elements of Tonga's culture is being digitised and how is it being digitised?
 - b. What digital technologies could be used to preserve cultural heritage in Tonga?
 - c. Why is it not being used?
 - d. How do you think the digitisation of cultural artefacts in Tonga will affect the Tongan culture in the future?
 - e. What are factors preventing digital technology from being used to preserve cultural heritage in Tonga?
 - Resources
 - Skill set
 - Budget
 - Perception of the need
 - f. What are the advantages/disadvantages of using digital technology in the process of preserving cultural heritage in Tonga?

*Approved by the Auckland University of Technology Ethics Committee on **type the date on which the final approval was granted** ATEC Reference number **type the ATEC reference number***

APPENDIX FIVE: Confidentiality Agreement

AUT

TE WĀNANGA ARONUI
O TĀMAKI MAKĀU RAU

Confidentiality Agreement

Project title: **An Exploration on the use of Digital Technology for Preserving Cultural Heritage in Tonga.**

Researcher: **Anau Mesui**

- ☐ I understand that all the material I will be asked to transcribe is confidential.
- ☐ I understand that the contents of the tapes or recordings can only be discussed with the researchers.
- ☐ I will not keep any copies of the transcripts nor allow third parties access to them.

Transcriber's signature:

.....

Transcriber's name:

.....

Transcriber's Contact Details (if appropriate):

.....
.....
.....
.....

Date:

Project Leader's Contact Details:

Anau Mesui

Auckland University of Technology (AUT)

Auckland City, 1010

anau.henry@aut.ac.nz

Approved by the Auckland University of Technology Ethics Committee on type the date on which the final approval was granted AUTEK Reference number type the AUTEK reference number

Note: The Transcriber should retain a copy of this form.

APPENDIX SIX: Conference attended during Masters' Study

Conference:

Paper: '*Digital Technology for Preserving Cultural Heritage in Tonga*', Conference theme – Strengthening Southern-driven cooperation as a catalyst for ICT4D. The **15th International Conference** on Social Implications of Computers in Developing Countries, Tanzania, May 1st-3rd, 2019.

Presented at **The 15th International Conference** on Social Implications of Computers in Developing Countries, Tanzania, May 1st-3rd, 2019.