Cape Peninsula
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CAPE TOWN AS A SMART DESTINATION TAILORED FOR CHINESE TOURISTS

by

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DECLARATION

I, Alvin Ngoni Arnardu, declare that the contents of this dissertation/thesis represent my own unaided work, and that the dissertation/thesis has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

18 February 2021

Signed   **Date**

ABSTRACT

The extant body of knowledge suggests that Cape Town's current smart city efforts are inclined to the traditional Eurocentric markets. Cape Town tourism is, therefore, not exploiting enough of the revenue from the lucrative Chinese tourist market.

This study aims to articulate how a smart city like Cape Town, as a major tourism destination in South Africa, can satisfy the Chinese tourist market via its smart city attributes and in so doing make Cape Town more attractive to them.

Tourism is one of the major contributors to the gross domestic product of Cape Town and South Africa. The digitalization of the tourism experience has given birth to the design of smart tourism destinations around the world. The Chinese tourism market is one of the key emerging markets targeted by South Africa. Although China's tourism is in its infancy compared to the traditional Western tourism markets, it had the highest tourism expenditure in the world in the last few years and this is expected to continue to increase. The Chinese are, therefore, a lucrative tourist market and a tourism revenue-generator for Cape Town. The Chinese generation Z has been found to be highly attracted the uses of social media, gamified tourism and the following of UGC (User Generated Content) media trends. The eastern market has a deferential preference in UI/UX designs, different online-market. Amongst other challenges China's payment systems have blocked out foreign companies from penetrating their market until recently. Technology enhanced tourism has driven the concept of smart tourism adopted in this research to cater to the needs of the Chinese tourists.

Cape Town, as a smart city in South Africa, and other cities around the world as well as Shanghai, as the largest city in the world by population, are adopted as a case study research method. This would support the exploration and reflection of multidimensional factors of the concept of a smart city. This socio-technical study extends the view that information communication technologies (ICT) and the knowledge-driven economy could increase Cape Town's competitiveness in the tourism economy. Although the research focus is on tourism, a smart destination approach provides a spill over effect in other industries. This research through the application Smart Africa manifesto's development agenda aims to provide a practical approach to reducing poverty, creating prosperity and increasing productivity.

Substantive consideration is being given to the fact that smart cities are about improved traffic management, communications and related public services. This study applied the triangulation of theory, data sources, and data collection methods based on Nokia's taxonomy of smart city

applications. In the empirical phase, key ICT officials of the CoCT (City of Cape Town) and the Western Cape Government were invited to participate in in-depth interviews. Based on the outcome of these interviews, the second series of in-depth interviews were conducted with stakeholders in the tourism sector within Cape Town.

The research applied a socio-technical research methodology applying qualitative data collection techniques. Participant of the data gathering were selected through stratified random sampling, identifying participants with rich knowledge in the study. The Smart destination concept identified two groups of stakeholders from the tourism and the ICT domain in Cape Town. From a city panning perspective the City of Cape Town's Department of Economic Development and Tourism (DEDAT) emerged as a suitable participant to provide data on ICT developments and planning in Cape Town. To provide meaning and understanding to the collected data a thematic analysis by categorising the common keywords that emerged and developing them into themes. The significant findings support the prevailing body of knowledge which proposes that Cape Town implements best practices for becoming a smart, safe and sustainable city. The city continues to develop and implement smart city initiatives with distinct objectives aligned with Nokia's taxonomy of smart city principles.

The value proposition of the study is a commentary on smart cities and the development of tourism in Cape Town. This would advise ICT strategies, policies and city officials in their transformation towards smart cities, particularly in Cape Town and in South Africa.

ACKNOWLEDGEMENTS

DEDICATION

This thesis is dedicated to my mother Charity Chimwamafuku Arnardu. I cannot say thank you enough for all you have toiled for this to be possible.

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ACRONYMS/ABBREVIATIONS

Terms	Explanation
ADS	Approved Destination Status
ANT	Actor Network Theory
BRT	Bus Rapid Transit System
CBT	Community Based Tourism
CNTA	China National Tourism Administration
CoCT	City of Cape Town
DEDAT	Department of Economic Development and Tourism
EV	Electric Vehicle
GPT	Group Package Tours
FIT	Free Independent Travel
Fx	Fibre to the x
IDC	Industrial Development Corporation
IoT	Internet of Things
IP	intellectual Property
ITS	Intelligent Transport System
ITU	International Telecommunication Union
MPLS	Multiprotocol Label Switching
NDT	National Department of Tourism
RFID	Radio-frequency Identification
SARS	Severe Acute Respiratory Syndrome
SDL	Service-Dominant Logic
SoCoMo	Social-context-based – Mobile Marketing
STA	Smart Tourism Attraction
STDRS	Smart Tourism Dynamic Responsive System
STS	Sociotechnical Systems
U4SSC	United for Smart Sustainable Cities
UGC	User-generated Content
UK	United Kingdom
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNWTO	United Nations World Tourism Organisation
USA	United States of America
VC	Venture Capital
VFR	Visiting Friends and or Relatives
WCG	Western Cape Government
WSN	Wireless Sensor Network

CHAPTER ONE: INTRODUCTION AND BACKGROUND

1.1   Introduction and background

Smart technology as a concept is the application of technology in day to day living to promote social innovation and transformation (Mealha & Santos, 2018). A lot of barriers and sustainability needs arise due to urbanisation, inter-continent migration and tourism, leading to a mixed culture that needs to be integrated. This, in turn, is driving the need for smart cities that use IoT (Internet of Things) to not only monitor surroundings but capture data, process, and react to it (Kortuem et al., 2010). There have been initiatives of creating smart destinations in cities such as Jeju in Korea (Petrolo et al., 2017), followed by an increase in the number of Asian tourists visiting.

Tourism has become one of the crucial Gross Domestic Product (GDP) contributors of most economies around the world; the United Arab Emirates and other Eastern countries have shifted their focus from relying on natural expendable resource reserves to creating a conservable economy from self-sustainable tourism (Shayah, 2015:735; Glasmeier & Christopherson, 2015:5). To increase tourists' inflows, South Africa has made efforts to market and attract new emerging markets such as Asia and particularly China (Lehohla, 2017). Since 2012, China has had the largest outbound tourists with an exponentially increasing expenditure, presenting a market opportunity of revenue for tourist-based economies (Chen, Gang Li & Zhang, 2016). (Chen et al., 2016a)Despite the increase in Chinese tourist arrivals in Cape Town the rate of this increase is laden to the rate of Chinese outbound tourist growth around the world (South African Tourism, 2016:4; National Department of Tourism, 2017:7–10).

While South Africa has made effort to draw Chinese tourists by marketing and selling destinations, a little attention has been paid in the cultural and technological differences between the Chinese and South Africa in the process of delivering tourism services (Chen & Duggan, 2016c:49,57; Liberato et al., 2018:7). The research further analysed the use of smart technology in tourism and establish the extent to which these are contributing to the tourism industry with a focus on Chinese tourists.

An explorative research methodology with the collection of qualitative information from tourist service providers will consequently assist in the designing of questionnaires for quantitative data collection and analysis. Consent letters were used to inform respondents that their

privacy, free will, anonymity and confidentiality would be respected before carrying out the interviews.

The research aimed to assist Cape Town and Africa by providing insight into how smart cities in developing countries can be a smart destination for tourists from different regions of the world with different socio-cultural backgrounds.

1.2   Research problem

1.2.1   Background to the research problem

China has had exponential economic growth because of a rise in per capita income in the middle class coupled with high population growth (Dai et al., 2017:254). This resulted in an increasing market of tourists that are considering foreign investment and travelling abroad (Dai et al., 2017). Despite this rapid growth Xiang (2015:5) refers to the growth of the Chinese tourist market as just an "appetizer" because of the low passport rate of China in comparison with the other countries that follow it in generating tourists.

As in most countries, the highest numbers of tourists visiting South Africa are regional and local tourists (National Department of Tourism, 2017). On the contrary, most revenue from tourism is realized by international tourists (National Department of Tourism, 2017). China has contributed a little in international inbound tourists in South Africa in comparison to the other leading countries. The Asian markets have been rising everywhere but more rapidly in tourism in the Eastern region (Lehohla, 2017).

Western Cape attractions have consistently dominated the top tourist landmarks and attractions visited in South Africa by international tourists (South African Tourism, 2016). The rapid growth in tourism development in the world poses threats such as degradation and pollution on valuable heritage resources and special sensitive ecological environments (Romão, 2018). Solutions to these problems and resolving the paradox between conservation and development is a conundrum for all countries that rely on tourism for economic growth (Zhong et al., 2015). As in the changes in buying and processing tickets and hotel-reservations in the past decade across the globe, Balandina, et al. (2015) state that there will be a major transformation not only in the e-tourism industry but changes targeting and focused on the roles of traditional tourist service providers, such as tourist agents and guides. These may eventually disappear or seriously change in the way they operate. There is a potential of ground-breaking IoT influenced innovations of smart tourism, that can be focused on new emerging eastern markets. IoT is an umbrella term used to mean physical objects that are

embedded with sensing capabilities and can connect to the internet and provide data concerning the other objects and their surroundings (Gcaba & Dlodlo, 2016).

1.2.2 What is the problem?

In comparison to the existing exponential growth in international levels of inbound Chinese tourists, Cape Town is struggling to target the rapidly growing Chinese tourist. According to South African Tourism (2015), South Africa only converts a little of its targeted market into actual tourists as arrivals are always below the target of forecasted arrivals. This means more effort to increase foreign tourists is warranted with China being one of the core target markets. Despite the rapid growth of Chinese tourists around the world, for the tourism industry to remain solid there is a need to improve competitiveness and delivery in tourism against other sectors in line with technological trends and movements into the new markets (National Department of Tourism, 2017).

1.2.3 Who does it affect?

The tourism industry, Cape Town government and Destination Marketing Organizations (DMOs) are putting effort in attracting Chinese tourists although tour operators, agents, attraction centres and accommodation hoteliers are not doing enough to retain the tourist in service provision. DMOs are crucial stakeholders that use enabled actors to improve the tourists' experience (Fabry & Blanchet, 2019). According to Stanley Chan (2016) most young, inexperienced Chinese tourists are unfamiliar with many travel/leisure products and have challenges in their decision-making and consumption process, which western tourists service providers have taken for granted. The Cape Town tourism environment is not providing the best experience to the drawn Chinese visitors, creating a depraved image to the Chinese tourists by not meeting their expectations.

1.2.4 How is it a problem?

The Western Cape is missing a significant potential revenue stream from the Chinese tourist market. Unlike in other common tourist destinations, South Africa has had inconsistent growth and fluctuations in Chinese tourists. Despite marketing campaigns, in 2017 tourist arrivals declined in growth from 34% to 17% (Stats SA, 2018). Cape Town is not advancing fast enough in technological readiness to achieving global standards.

1.3 Research Problem Statement

Cape Town's tourist environment is not currently geared to attract Chinese tourists, thus missing the world's largest growing tourist source. The current smart city (destination) efforts

are inclined to the traditional Eurocentric markets. Cape Town tourism is therefore not exploiting enough of the potential revenue from the Chinese tourist market.

1.4   Objectives and research questions

The research aims to explore the potential opportunities for implementing IoTs in Cape Town to turn it into a smart destination that is accoutred to attract Chinese tourists.

1.5   Objectives of the research

To determine the extent to which Cape Town can satisfy Chinese tourists in terms of smart city technology and services.

To establish and make recommendations to smart city stakeholders on how a smart destination that specifically caters to the Chinese market can be achieved.

1.6   Research questions

Table 1.1. below shows the relation between the research questions, purpose and methods.

Table 1.1: Research purpose, question and method

Question	Purpose	Method
What smart city initiatives exist in Cape Town?	To discover the state of smart city services in Cape Town.	Interviews with the City of Cape Town (CoCT), tour operators, etc.
How have other smart cities implemented internet of things (IoT) to bring about smart city status?	To gain insight into other smart city IoT initiatives.	Analysis of documented smart city IoT initiatives.
How can Cape Town improve its focus on Chinese tourists using smart technologies?	To discover means and methods whereby Cape Town can improve its service to Chinese tourists through the implementation of smart devices.	Data collected from tourism stakeholders on Chinese touristic experience through interviews.

1.7   Chinese tourism and smart destinations

The Asia-Pacific's territorial economic structure has turned out to be China-oriented in the recent decades (Drysdale, 2010); to date, Asian tourism is dominated by China and Japan

(Liu, 2018; Liu et al., 2018). Research focus on Chinese tourists will create avenues of attracting the rest of the Asia-pacific countries. It has been noted by Zhong et al. (2015) that China's tourism has attracted growing attention from academic researchers and investors from mainland China and all over the world. They further discovered that little attention has been put on consumer behaviour and more focus was put on supply and demand areas. Wang et al. (2018) observed that although China's outbound tourism research has been rising in the past recent years, it is dominated by ethnically Chinese researchers who focus on destinations in Asian countries, Oceania, and North America. They discovered that there is a developing "Second Wave of China outbound tourism" that has been understudied, falling short of theoretical or methodological breakthroughs.

1.7.1 Disposable income

Although China has had the largest GDP, Dai et al., (2017) claim that the actual disposable income is probably more than indicated by official figures due to "hidden income ". China has had an exponential increase in international tourism expenditure, with its travellers estimated to have spent US$261 billion in 2015, while The United States of America (USA) ranked second with US$122 billion (Greek travel pages, 2017). Since the late 1990s, the Chinese have been increasing their trade with Africa with natural resources accounting for a chunk of Africa's exports to China, and bilateral trade that almost matches to China's overall foreign trade of the year 2015 (Chen et al. 2016).

1.7.2 China's new travel freedom

In the communist era, the Chinese were restricted in travelling outside of non-Asian countries. It was very difficult to obtain a passport due to the monetary costs, paperwork and processing time. Those people who managed to obtain passports would only travel as government organised tour groups. Currently getting a passport in China is fairly easy although the proportion of generated Chinese tourists to the population is low, and the Chinese are still accustomed to travelling in groups often preferring Chinese tour guides (Hays, 2013). Although China has the highest internet and mobile penetration, the platforms and channels for making bookings and payments are different from the ones used outside the Asia-Pacific region. Stangl and Pesonen (2017) emphasize the need to research on Chinese generation Z millennials' booking and online travel behaviour patterns.

1.7.3 What is a smart city?

According to Neirotti et al. (2014), there is a surmise on the definition of a smart city or on what its standard features are. There has been no agreed standard of measurement of a smart city; however, many cities have announced their steps to transmute to a smart city. Research on

smart cities around the world and in South Africa has focused on how IoT, CoT (Cloud of Things), Big Data and other rudiments of smart cities essentially better the lives of citizens and visitors. Petrolo et al. (2017) define a smart city as a city that operates sustainably and intelligently, by bringing together its entire infrastructure and services into an integrated whole and by applying smart devices for monitoring and controlling to improve efficiency and sustainability. There is a rising consciousness in sustainability and smart city service delivery in cities across the world, it is projected that the world smart cities market will rise above US$1.5 trillion in 2020 (Frost & Sullivan, 2015).

1.7.4 Smart City development in Brazil, Russia, India, China, and South Africa (BRICS)' countries

Drawing from the trends of the current economic growth rate, innovations in science and technology and other factors, Mostafa and Mahmood (2015) predict that the BRICS countries have the potential to be more influential in the G7 in the coming years. The Indian Ministry proposed creating a ''BRICS Human Smart Cities Institute'' connecting smart city-regions as opposed to smart cities. This would mount collective efforts for development with an emphasis on smart city development (Ministry of Urban Development, 2015)(Ministry of urban development, 2015). Table 1.2 below shows a summary of some smart city initiatives in BRICs countries.

Table 1.2: Smart city initiatives in BRICS countries

Country	Organisation – Project	Initiatives and objective
Brazil	Transparency Brazil (Alexandre et al, 2015)	Open data is collected and used to predict when floods might occur, prepare by evacuation (Berst et al., 2014).
Russia	Skolkovo Innovation Centre	Green physical planning (Angelidou, 2014).
India	Smart cities that exceed 100, with high-technology capabilities, (Tiware, 2014) - Transparent Chennai	Sharing information and new data with the population and involving them in planning and city governance.
China	200 Pilot Smart Cities population (Liu and Peng, 2014)	To assist in planning for a growing urban population and their Medical and Education plans.
South Africa	CoCT - Project Khulisa,	Smart Parks, Open Data

1.7.5 Smart city initiatives in Africa

The Tunisia Economic City in Tunisia and Rabat City in Morocco are some of the efforts in the African region to implement smart city initiatives. Ibrahim et al. (2015) indict the failure of developing countries to a knowledge gap in relation to the development towards Smart Sustainable Cities to the gap that occurs due to a set of challenges existing in a city.

SA Tourism (2015) purports that destination development can result in tourist nodes being created through innovation and finance, as in the case of Sun City. In efforts to promote South Africa as a destination for China, the South Africa-China office once held a competition on Weibo, a popular Chinese microblogging platform that assists travel agents to compete in promoting holidays in South Africa. South Africa has established nine visa facilitation centres in different cities in China (Brouwer, 2018).

The increase in the Western Cape's tourist arrivals have once alluded to Project Khulisa, a targeted strategy to grow the tourism sector (Pillay Kavitha, 2017). The project includes exposure to cultural and heritage tourism, business tourism and marketing tourism to new specialised markets (Western Cape Government, 2015). According to Lourie (2016), Cape Town smart city initiative efforts included:

- Public Wi-Fi that started in 2016.
- CCTV equipped with 560 cameras installed around the city.
- Open Data Portal that started in 2015.
- The smart grid's pilots being carried out by DEDAT (Department of Economic Development and Tourism).

Cape Town's efforts in Africa, accorded it to be the top-ranked potential smart city in Africa on the list, although Tunis (137th) is gaining in Forbes in the smart city ranking (Forbes, 2017).

1.7.6   Devices and systems in successful smart cities

'In-Joy-Life Smart Tourism' in Taiwan, is a smart tourism project with a mandate to effectively control tourists in the peak season by using travel cards for different packages which allow them to access all the shopping and transport modes (Kaur & Kaur, 2016). Virtual tours are offered to tourists on their smart devices and touch screens installed in different locations. The Korean Tourism Organization opened an Application Programming Interface (API) named TourApps, which facilitates the convenient use of more than 30,000 pieces of domestic tourism information including accommodations, restaurants, and nationwide festivals (Kim et al., 2017).

1.7.7   Smart tourism and smart destination

Smart tourism is defined as providing customized services for tourists based on real-time communication and location information, thus smart tourism is focused more on service provision using the same undercurrents of a smart city, in turn, creating a smart destination for tourists (Boes et al., 2016a). With the trending awareness and research into smart citizens, smart tourism can be achieved by increasing functionality through the use of IoT technologies in tourism (Gcaba et al., 2016).

Smart tourism in this research will explore IoT in hospitality services, tourism marketing, wildlife, water, birds and plant species monitoring with a specific focus on Chinese tourists' interests. According to SA Tourism (2015), tourism has the potential to push huge local economic development, and the growth of tourism clusters can open huge monetary multipliers in regions that might have had little or no 'industrial' potential. A smart destination is "an innovative space, accessible for all, established on cutting-edge technology infrastructure which guarantees sustainable development of the land, facilitates the interaction and integration of the visitor with the surroundings and increases the quality of their experience in the destination, as well as the quality of life of residents" (Ávila et al., 2015).

1.8   Research design and methodology

This chapter provides the principles, procedures, and practices that govern research, and the plan that will be used to examine the questions of interest. As modern research is becoming interdisciplinary (in this context a fusion of IoT and Tourism), to conduct more effective research Johnson and Onwuegbuzie (1990) contend that epistemological and methodological pluralism should be advocated in order for researchers to be more informed about methodological and epistemological opportunities.

1.8.1   Research philosophy

A pragmatic approach is more appropriate in this research as it assesses scientific and philosophical beliefs of the Chinese tourists considering the present knowledge, cultural and historical context (Putnam, 2005). For action research, the ontology of pragmatism philosophy has been suggested in information systems research (Goldkuhl, 2012). The research will adopt a pragmatic knowledge form of constructive knowledge that seeks to understand the Chinese tourists and environment and suggest approaches to finding smart destination initiatives.

1.8.2   Research methodology

Onwuegbuzie and Leech (2006) emphasize the need for a relation between the research questions and the method of research. A qualitative research approach with a purposeful developmental design will be adopted as guided by the nature of the subjects of research and the research questions (Greene et al., 1989).

Qualitative research questions describe with the aim to seek, discover or explore the multidimensional phenomenon of tourism that can be viewed from various perspectives (Dann et al., 1988). The research will be lineal, collecting qualitative data from smart city service providers and progressively developing it and analysing existing and collected information from the tourism department and service providers to obtain insights on Chinese tourists.

1.8.3 Research population

The research has two primary population groups, namely the tourism stakeholders involved with Chinese tourists visiting Cape Town as their tourist destination, and the City of Cape Town officials representing the smart destination stakeholders involved in the planning and implementation of smart city services. In an environment with large and evenly distributed characteristics of the population, random sampling would produce a representative sample. Stratified random sampling will be used to select respondents from which to collect qualitative data based on the size and type of the respondents. The stratified sampling approach ensures that the mentioned groups of respondents are well represented (Mathers et al., 2007). Since Chinese tourists travel in groups, tour agents, and hospitality service providers would be the best to approach.

1.9 Sampling

According to Marshall (1996:523), a sample size should be adequate to answer the research question. An acceptable sample size was derived taking into account margin of error, response rate, confidence, interval accuracy and mostly data saturation point. According to Chung et al., (2015)'s smart tourism research, the Q method can be used to calculate the sample size that combines quantitative statistical methods to identify them with qualitative interpretation. However, in qualitative research the snowball sampling participants are derived from the information provided by the initial respondents as some respondents are likely to provide a greater understanding and insight than others due to experience, education, roles and cultural position (Assessment Capacities Project, 2012).

1.10 Data analysis

Research calls for an understanding of how to choose statistical analysis methods suitable for certain circumstances and how to infer the ensuing results (Bryman & Cramer, 2005). The unit of analysis and observation are tourism stakeholders and City of Cape Town officials. Quantitative data analysis assists in avoiding faulty conclusions and biases. However, due to the nature of this research, a qualitative analysis was adopted to a point of data saturation is reached. A thematic analysis was be implemented through analysing responses from the interviews extracting codes from common words and phrases (Doorninck, 2012). These codes are developed into wider themes and subsequently into categories. The categories are then used in further analysis and correlated with literature in the interpretation of results.

1.11 Scope of the research

This section describes the delineation and delimitations of this research.

1.11.1 Delineation

This research did not consider every smart destination tourist stakeholders but was consequently be limited to selected smart destination stakeholders that have influence in city planning in Cape Town and individuals or organisations involved in providing tourist services such as CoCT, Cape Town Tourism, tour operators, tour guides and hospitality service providers.

1.11.2 Delimitation

Owing to the limited funds, time and the pandemic of 2020, this research was conducted on a small scale in the Western Cape. Although expert interviews were carried out to ensure the quality of data, the reach of Chinese tourists was very minimal though warranted.

1.12 Ethical considerations

To be an ethical researcher behaviour requires that investigators act in ways that do as little harm as possible to all objects and the environment involved in their study, to minimise harm and "do good" if possible (LeCompte and Schensul, 2015:3).

The ethical and moral conduct that is to be used in research is based on the perspective to be adopted. The utilitarian perspective carries out a cost-benefit analysis to determine whether there is a greater good than harm when faced with ethical predicaments, whilst a deontological approach follows general guidelines of moral behaviour that should always be followed at all times regardless of the costs (Dwyer et al., 2012). There is a wide difference in moral values which makes it difficult to judge between what is wrong or right and impulses the importance of 'moral character' in 'host' – 'guest' relations in tourism (Smith & Duffy, 2002).

Informed consent is a process of communication in research between researcher and participants that begins before the collection of data informing participants of the research description, risks, benefits, confidentiality and voluntary participation. Respect for individuals' justice and beneficence are called for by fundamental ethical principles of human research ethics (Tobergte & Curtis, 2013). Informed consent was carried out orally before and during an interview with the use of consent forms beforehand. The digital revolution has given rise to new questions regarding the moral limits to gathering information and how organizations and governments must respect the privacy of persons as they conduct legitimate information-gathering activities.

1.13   Significance of the research

The research aims to discover the extent to which Cape Town can satisfy Chinese tourist in terms of smart city technology and services. The outcomes of this research are expected to give direction for further studies in IoT application to make Cape Town a smart destination competitive in accordance with global standards. This is to assist the Western Cape government policymakers in better understanding and matching the city's future smart destination plans to match Chinese tourists' expectations in technological innovations. Future studies and organizations in tourism can further extrapolate the research and use the same or similar approaches to attract and retain other existing Asian based markets. Ultimately this research was expected to benefit the researcher to improve on research skills towards the completion of a Master of Technology: Information Technology.

1.14   Structure of the thesis

I.   Chapter one: Introduction - presents a general introduction, background of the study and scope of the whole research.

II. Chapter two: Literature review - reviews the literature on China's tourism market, smart cities / destinations, Cape Town tourism and the theoretical framework guiding the rationale of the study.

III. Chapter three: Research plan and design - explores the methodology and design applied to achieve the objectives of the study.

IV. Chapter four: Research findings - presents the results that were obtained from the data collection and a brief synthesis of the results.

V.   Chapter five: Analysis - discusses the findings and results of the qualitative data analysis and extrapolates the findings.

VI. Chapter six: Conclusion - presents the culmination and recommendations from the research.

CHAPTER TWO: LITERATURE REVIEW

2.1   Introduction

A literature review is a comprehensive and systematic method of evaluating, and synthesizing the existing body of written work produced by researchers and scholars showing an author's knowledge about a particular field of study, methods, and history (Okoli & Schabram, 2010; Reardon, 2011; Randolph, 2009). This literature review explained how technology has evolved in tourism to bring out an understanding of the word "Smart'' as it has been popularised in the modern world to give a clear understanding of what a "smart destination" is. The understanding of a smart destination assisted the researcher in discovering how Cape Town can be evaluated towards becoming a smart destination and how Chinese tourists are benefiting from these developments. The structure of the research is shown below in Fig. 2.1 The literature explored the tourism subject (Chinese tourists) along with their most popular and preferred destinations and triangulate findings with smart destinations. This was done by assessing existing smart destinations preferred by Chinese tourists.

Subsequently, to conferring an apprehension of a smart destination, this research evaluated the smart city design, examples of existing smart cities, challenges in smart cities, Chinese tourists and Chinese smart cities. Because the technologies required to design a smart city extend into various fields and require to be integrated into complex systems to be effective (Lee et al., 2014), the literature showed the various paths to attaining a smart city and find the best that fits Cape Town in developing towards becoming a smart city. These mentioned aspects cover the research focus (Fig. 2.1 below).
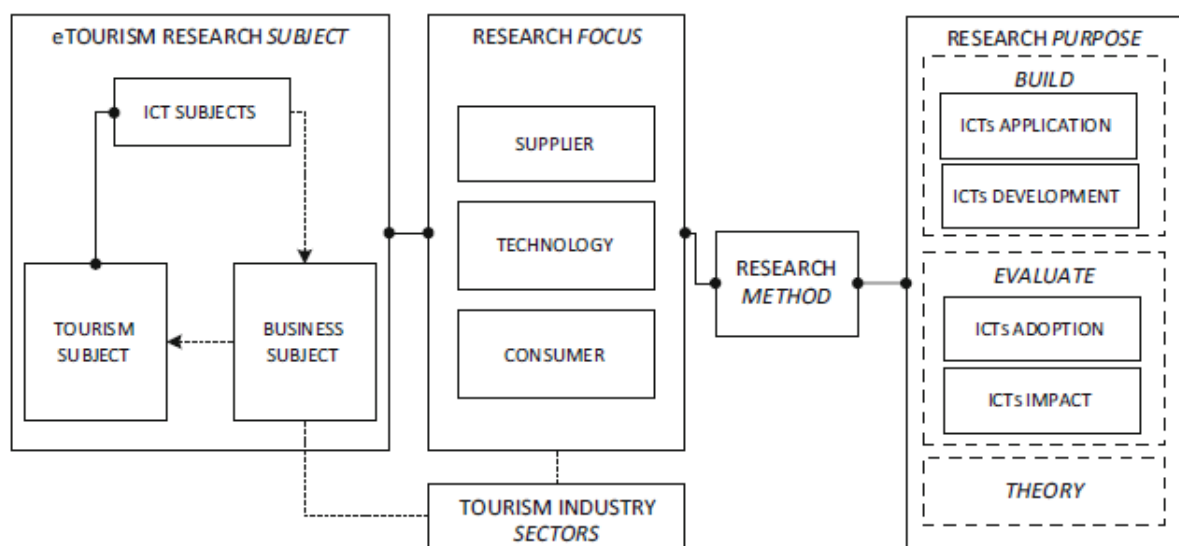
Figure 2:1 Structural model of e-Tourism research categories

2.2 Cape Town as a tourist destination

This section introduces Cape Town's tourism background and profile. Later in the following subtopics more explorative literature expounded on the digital and smart aspects of Cape Town.

Tourism is one of the most rapid yet consistently growing sectors in the world, doubling its growth in the last decade (United Nations World Tourism Organisation (UNWTO), 2015). Cape Town has been labelled as one of the most significant 'laboratories' for acknowledging tourism's role in social and economic development and its potential for further growth (Western Cape Government, 2018a). According to the UNWTO (2018), although there have been fluctuations in the tourism industries' performance, Cape Town Tourism is accountable for 10% of the Western Cape's GDP. The strength of tourism is driven by strong policies revised yearly aiming to increase jobs and make the city a world-class tourist destination (Mhangara et al., 2017).

2.2.1 Tourist attractions in Cape Town

The Victoria and Alfred (V&A) Waterfront has consistently been the most visited tourist attraction in Cape Town followed by the cableway and Table Mountain (Strategy Insights and Analytics unit (SIA), 2018). The cableway gives access to Table Mountain, the frame and icon of Cape Town. Cape Town has a variety of attractions that make a great itinerary for tourists visiting Cape Town, which include theme parks, monuments, art galleries, historic sites, and museums. Kirstenbosch National Botanical Gardens is regarded as one of the world's greatest botanical gardens; and a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site. In terms of activities and expenditure, most tourists including the Chinese spend more on shopping than any other activity. The most common activities in the Western Cape are adventure-seeking, natural attractions, and going to the beach respectively (SIA, 2018).

2.2.2 The tourist profile of Cape Town

In 2017 the largest tourist source market to Cape Town was the United Kingdom followed by Germany and the USA. Cape Town's biggest tourist sources are mainly Eurocentric tourists from the UK, USA and Germany. Other source markets contributing to the top ten include Namibia, France, Canada, Switzerland and China (SIA, 2018). In a survey by the National Department of Tourism (NDT) (2019) it was discovered that the changes in the composition of source tourists demand a change in South Africa's tourism strategies. New emerging markets

include new middle-class tourists from large source markets like China and new older tourists from developed countries among others. Additionally, the National Department of Tourism (2019) indicated the need for ways to address technology and innovations that revolutionize the tourism industry to strategically tailor its infrastructure development in line with the new expectations of the emerging markets. An analysis of the 2016 and 2015 volumes showed that the number of visiting tourists increased in all the ten leading overseas countries with China hinging the largest increase of 38,1% (Lehohla, 2017).

2.2.3   Benefits of tourism to Cape Town and South Africa

Tourism sectors provide the opportunity for intra-African migration of skilled workers and stimulating foreign investment (UNCTAD, 2018). According to the UNWTO tourism is expected to grow at a rate of 3.8% annually for the period between 2010 and 2020, in turn leading to more investments in tourism and infrastructure development (UNWTO, 2018; Teslya & Ponomarev, 2016). The spending of money by tourists promotes locals to be business conscious, encouraging pro-poor tourism and informal business tourism as retailers spring up in communities with the expectation and awareness of visiting tourists (Chen et al., 2016b). Additionally, the spending of money provides more revenue to the local government improving the standard of living.

The misapprehension of tourism dynamics has compelled researchers to unearth new novelties to special interest tourism (niche tourism), that support different particular drivers of leisure and purpose travel (Romão, 2018:107). These specialties encompass medical tourism, food, birding, eco-tourism, wine tourism, cruise and science (Mulet-Forteza et al., 2019; Ellis et al., 2018; Hunt & Harbor, 2019; Katsoni et al., 2016; Hung et al., 2019). Tourism provides a multitude of "indirect" goods and services that cannot be directly measured or attributed as part of the tourism sectors' contribution to economic growth, such as those offering security, food supplies, laundry, marketing, and other services to the tourism industry (National tourism sector strategy, 2017). South African tourism creates a value chain system that consists of multiple relations and ties to other government sectors and departments, which are crucial and have a high level of impact on the delivery of tourism ventures. The synergies and interactions occur between private businesses and with the Department of Home Affairs, Western Cape Government and other entities. Tourism offers economic sustainability through its link with other sectors of the economy stimulating demand and production in other industries with a multiplier effect (National tourism sector strategy, 2017:9). In addition to the directly measurable economic benefits, tourism in developing countries enables broad linkages with several economic sectors creating value chains to other sectors of a nation's economy (Odunga et al., 2018:26). From the initial phases of planning a trip, a scope of activities is

carried out in the provision of services or products in different phases of delivery and the production. To promote global competitiveness in modern tourism, UNWTO proposed a methodology for tourism product development that can be implemented in African countries providing techniques and tools for clear strategies based on suitable tourism product development (UNWTO, 2015).

Tourism draws the international market to informal traders in Cape Town to sell souvenirs, craft, food, creating employment opportunities and alleviating poverty (Trukhachev, 2015:3053). Numerous researchers have discovered that the informal traders' sector in tourism in South Africa has attracted a significant amount of immigrants from surrounding countries supporting sub-regional growth (Rogerson, 2018; Peberdy, 2017; Manjokoto & Ranga, 2017). In the export category, tourism is the third-largest exporter after chemicals and fuels and the largest supporter of international trade (Teslya et al., 2016; UNWTO, 2018).

Although some researchers have argued that tourism erodes traditional culture as local people mimic behaviour and cultural patterns of tourists, recent research by Richards (2018) contends that sustainable tourism can preserve and uphold the respect of different cultures through heritage tourism (Kornilaki & Font, 2019; Stratan et al., 2015; Yu & Xu, 2019b). Culture preservation opportunities can emanate when tourism businesses conform to the local community and to societal values and expectations (Kornilaki et al., 2019). Additionally, the society of host communities, in turn, can discover a source of pride in cultural traditions being promoted in their living environments and showcased them to visitors developing a regional identity as well as offering an array of activities as seen in wine farms (Ferreira & Hunter, 2017). Tourism has been considered to be a green-gold owing to the economic development, sustainable initiatives and responsible tourism. It has contributed to national development, along with the protection, preservation, and conservation of historical, cultural, historical, natural resources, and alleviation of climate change (National tourism sector strategy, 2017).

The demand for tourism accessibility has resulted in the development of road infrastructure to promote tourist routes and cultural tourism. The Western Cape is well known for its wine routes that are in small towns surrounding Cape Town attracting more than 18 000 visitors in a year (Donaldson, 2018:28). Wine routes are cultural itineraries that may involve visits to wine farms with or without a wine tasting; exploring vineyards and visiting wine museums (Ferreira et al., 2017). According to Ferreira and Muller (2013), the Cape Winelands is one of the most scenic Winelands in the world offering heritage and topographical landscapes that boast of well-preserved Cape-Dutch architecture. Small businesses in the wine regions have continuously developed more hospitality facilities including the building of well-rated luxury accommodation,

and award-winning restaurants and establishments. Between 2016 and 2017 Cape Town hotels have had the highest occupancy compared to Pretoria, Sandton and Johannesburg (National tourism sector strategy, 2017).

Community-based tourism (CBT) has been used as a tool and model for development and empowering communities in South Africa through entrepreneurship (Spenceley et al., 2016). Giampiccoli and Saymaan (2017) claim that community-based tourism draws the gap between inequalities between the benefits and the downside of tourism. The CBT model has been designed by the Department of Tourism in South Africa as a framework and guide to assessing tourism ventures for individuals planning to invest in tourism at a household level (Mtapuri & Giampiccoli, 2016). CBT supports eco-tourism and the developing of social entrepreneurship, creating new opportunities through innovation following a growing number of tourists seeking to pursue social progress and bio conservation (Booyens & Rogerson, 2016).

2.3 Chinese tourists

2.3.1 The value of Chinese tourists

To increase the source markets for the South African tourism market base, the National Department of Tourism (NDT) has focused on the growth of African regional markets and the emerging BRICS markets through innovation hubs and investment opportunities (National Department of Tourism, 2017).

The Chinese tourist market has suddenly attracted new researchers, mainly due to their high spending, international investing and their innovative technologies (Zhong et al., 2015; Gretzel et al., 2015b). Chinese Tech Cities have risen rapidly, accounting for a bigger share of Venture Capital (VC) investment than their US counterparts. Beijing accounted for a higher average of VC per annum. from 2016 to 2019, with volumes higher than San Francisco and New York (Savills Research, 2019). Despite the large numbers of Chinese outbound tourism that has evolved over the years, 5% of all Chinese citizens own a passport (Zhang, 2016). The WTO (1997)(WTO, 1997) predicted that by 2020 China would be the fourth highest generator of outbound tourism. However, China has been the largest generator of outbound tourists by a huge margin since 2016 when it became the world's largest outbound tourism market (Mao & Huang, 2016). In the *Chinese Outbound tourism 2.0 (2016)*, most of the researchers claim that China will continue to dominate in generating outbound tourists for the next decade (Xiang et al., 2016).

Exploring the expectations and needs of the different segments of the Chinese population can realize the emergence of new tourist groups that can be attracted by offering tailor-made

activities, with reduced seasonality varying to that of traditional Western markets (Arlt, 2016). Although there are vast literature and research on Chinese Tourism, Mao et al., (2016) posit that there is insufficient research that addresses demands and needs of certain segments of the Chinese markets including self-driving travellers, Free Independent Travel (FIT) or semi-FIT travellers, traditional group tourists, Visiting Friends and or Relatives (VFR) tourists and backpackers.

2.3.2   History of travel

The evolution of the history of China's outbound tourism has been biased towards Asian intraregional travel as Chinese outbound travel for leisure purposes were very restricted until in the late '90s. China once insistently perceived as overpopulated and unwelcoming had little research studies in Chinese outbound tourism (Li et al. cited in Arlt, 2016; Wang et al., 2016). In recent years, the growth of personal income and shift in Chinese holidays has enabled the Chinese citizens to have long holidays which has allowed them to travel to far away destinations such as America and Oceania. Many other countries are realizing the importance of Chinese tourists and thereby now easing visa application procedures and signing bilateral tourism agreements (Qiu & Fang, 2016). China established Approved Destination Status (ADS) to certain countries, a very special two-way agreement that confirms that the signed country is an approved destination for Chinese tour groups. According to government regulations, Chinese tour operators are not allowed to organize tours to non-ADS destinations (Zhang, 2016). Australia and New Zealand were the first countries to be granted ADS in 1999, and China has become a seasoned tourist source for Australia making it the most valuable inbound tourism market in Australia (Mao et al., 2016). In 2018, 180 countries had ADS agreements with China. A study by Wang et al. (2016) analysed six different approved ADS and concluded that the USA had an exceptional position as a preferred top destination for Chinese tourists. As the number of ADS increased, the variety of destinations increased to comprise of most major tourist destinations (Ying & Jin, 2016).

Although Chinese tourists have been perceived to be price-sensitive, their adaptation to tourism services has been claimed to be more crucial than pricing aspects (Tse, 2016; Chung et al., 2015). Service providers are trying to satisfy this market because they tend to seek hosts that respect the Chinese culture. During their travel, they expect to be provided with information in the Chinese language, and accommodation that provide Chinese amenities. Likewise, Wang et al. (2018) observed that Chinese tourists were cautious of being taken advantage of, highly valued safety, cleanliness and value for money. Additionally, other crucial anticipations were linked to food and accommodation facilities that relate to their culture. Conversely, Wang et al. (2016) discovered that product quality and service quality were grossly important for local Hong

Kong buyers, meanwhile price, risk and service quality were the biggest influential aspects for Chinese tourists. Between 2011 and 2014 the Chinese tourists' numbers in Mauritius more than doubled every year (Statistics Mauritius, cited in Arlt, 2016), becoming the highest spenders as well as raising the average daily expenditure of tourists in this period (Arlt, 2016; Tse, 2016). In 2017 South African tourism received several awards in China including the best international city which was awarded to Cape Town (South African Tourism, 2017).

Following the sensitivity of the Chinese tourists to prices, Southeast Asian destinations created zero-fare tours, package tours where operators at destinations gave heavily discounted tour packages targeting to recover the lost revenue from shopping and various other activities that would have been offered at high prices (Zhang, 2016). The Zero-fare tourism resulted in a high levels of corruption and ill business practices that led the Chinese government to established regulative efforts to control the unethical business practices, such as the Tourism Law of the People's Republic of China, enacted in 2013 (Wang et al., 2016c). The regulations protected and promoted individually organized Chinese tourism in Hong Kong (Wang et al., 2016c). This has also been a motive for the millennials to prefer self-organized tours in other destinations (Liu et al., 2018).

Avenue of Stars, a waterfront that offers panoramic views of the harbour in Hong Kong is the most popular attraction for Chinese tourists who visit Hong Kong. The other two most common visited places are Ocean Park and Hong Kong Disneyland theme parks (Ying et al., 2016). Other popular destinations for Chinese tourists include Hong Kong Convention & Exhibition Centre, Victoria Peak, Clock Tower and Wong Tai Sin Temple. Most of these destinations have special historic and cultural value to the Chinese tourists (Wang et al., 2016c). Macao, a local destination in China has a growing gaming industry that contributes immensely to Macao's GDP. According to Lui et al. (2016)(Liu et al., 2016), since 2006, Macao has been the leading gaming capital with gaming revenue surpassing Las Vegas by 7 times more.

To confront the growing Chinese's market demands American hotels and destinations have made initiatives to be China-ready. One of America's biggest booking channel Expedia entered China's online market by collaborating with eLong, Priceline and Ctrip International, China's number one travel firm (Tsuruoka, 2014 cited in Liu et al., 2016). American establishments have also attempted to integrate Chinese culture, to better their Chinese guests' satisfaction and experience. The initiatives from various hotels include: having tea kettles in hotel rooms, welcome pamphlets and restaurant menus translated into Mandarin, Chinese stations in guest room TVs, and authentic Chinese food (Liu et al., 2016). Hilton Hotel created the Chinese tourists' attraction program "Huanying Program", which includes Chinese-speaking hotel staff,

authentic Chinese food, Chinese TV station and amenities in guest rooms. The Huanyin Hotel (a Chinese hotel) is in more than 30 countries and 65 cities including London, San Francisco, Tokyo, London, Seoul, Paris and New York (Audrey Wong, 2019).

2.3.3 Travel and service expectations and rising preferred destinations

Due to the changing preferences of tourists in different destination attributes, Stanley Chan (2016) recommends uncovering tourists' preferences of different market segments. It has been discovered that younger tourists are drawn to active tourism activities whilst the elderly tourists are inclined to passive tourism activities.

Although cultural collectivism has made Chinese tourists more accustomed to all-inclusive group tours, a new trend in independent travel has been noticed in Chinese tourists' travel pattern in the USA (Li, 2016). The trends between 2012 and 2014 have shown a decrease in package tours and an increase in repeat visitors, vacations and flexible one destination visits, postulating that Chinese tourists are preferring more in-depth travel experiences (Liu et al., 2016).

According to Pendzialek (2016), in 2012 Chinese tourists' expenditure in Europe was 14% more than the world's average expenditure and most of it was on tax-free shopping. In Hong Kong shopping accounted for 77% of expenditures and for one-day visitors, shopping accounted for 92.4%. An important external factor that has encouraged many tourists from China to Australia is China's tourism laws, which include clauses to protect tourists from manipulative commission-targeted shopping and low standard tours, were put in to function on October 1, 2013 (Mao et al., 2016).

The growth of Thailand and Hokkaido as popular tourist destinations to Chinese tourists has been ascribed to good publication on television media, tv shows and programs (Ong & Ito, 2018). On the contrary, rape and kidnappings, airline crashes and natural disasters have created bad destination images and bad publicity to the Chinese for India and Philippines respectively, lowering in their attractiveness in recent years (Mao et al., 2016).

Table 2.1: Chinese destination perceptions

Destination	Complaints	Appraisal
Germany	The long-distance between accommodation and city centre. Fewer activities with local people. Limited information material in mandarin (Pendzialek, 2016).	Accessibility and rich culture.
Europe	The long visa application process. Lack of Chinese language information and material; Limited Chinese payment facilities or debit cards in a lot of places. Bad food and bad Chinese food.	Peaceful, clean cities, uncrowded, rich cultural past.
Singapore		Safety
Australia	Poor in history and heritage to the Chinese (Loulanski & Loulanski, 2015).	Nature and beauty environments. Good food, wine, local cuisine. Safe and secure tourist destination. Rich history and heritage; and beautiful coastal scenery.
America	Cleanliness, personal safety, and pleasant climate. However, food and safety are considered to be critically important attributes for Chinese outbound tourists (Liu et al., 2016).	The best provider of casino visiting/gaming and city sightseeing but relatively weak at dining at local restaurants, art gallery/museum and visiting historical/cultural heritage sites. In terms of destination attributes, the USA has relative power in terms of currency exchange rate, information, and opportunities for taking photos but failed in regard to shopping experiences (Liu et al., 2016).

Although lacking heritage and rich history, Australia has been ranked as one of the top destinations for Chinese tourists with popular features. As depicted in table 2.1, researchers had contrasting findings on Chinese perceptions on the heritage and history of Australia. Chinese tourists were found to be unattracted to destinations outside Australian capital cities. On the contrary, Ying et al. (2016) identified several external factors that inhibited Chinese from travelling to Australia. Among these were bilateral relations, visa regulations, language barriers, negative media, and other factors. Chan (2016)(Chan, 2016) further supports that the ADS scheme was introduced to ease application for visas as several destinations required lengthy paperwork and interviews when applying for visas. Although the introduction of ADS

assisted in increasing tours for Chinese tourists, Chen and Duggan (2016b) have noted that experienced tourists prefer FIT and is proving to be more satisfying than the group tours. Ying et al. (2016) further support that the ADS scheme was introduced to ease application for visas as some destinations required lengthy paperwork and interviews when applying for visas.

Aside from the fundamental requirements in tourism services, such as safety hygiene and cleanliness, Chinese tourists have peculiar expectations that are linked to their normal lifestyle and cultural habits. In Hawaii, they were found to be fond of the local community and foreign culture but would prefer Chinese food over local food in their visits, and some had a little interest in marine sports (Loulanski et al., 2015). To address the Chinese tourists' valued traditional collectivism, Li (2016) recommends that service providers take cognizance of small cultural values and meaning of cultural gestures, for example when assisting them in shopping actions such as wrapping gifts in red and its symbolism.

Wang et al., (2018) in the USA, discovered that there is a gap among Chinese tourists' perceived destination image and actual services they received. Negative publicity affects Chinese tourists' intention to visit places, leaving many undiscovered attractions. According to Liu (2018), individual Chinese tourists follow a particular track when exploring the tourist bubble, which has made user-generated content (UGC) based websites a common influence and a good source in information gathering and planning of trips among the Chinese tourists, as their language precariousness and reserved behaviour inhibit them from talking with locals effectively (Chan, 2016).

Chan, (2016) is of the opinion that travel agencies' signage guides and assistants in the Chinese language would assist to enhance shopping experiences. The guided tours have been made uncommon by the limiting of time spent at attractions and unsatisfactory information provided by the guides. As mentioned by Liu et al. (2016), the discontentedness of Chinese tourists visiting Europe emanated mostly from expensiveness of goods, tiring visa application process, etc. this concurs with Hilton and SOAS (2011) Blue Paper.

Ying et al. (2016) identified several external factors that inhibited Chinese from travelling to Australia, among these were bilateral relations, visa regulations, language barriers and negative media amongst other factors. Zhong et al. (2015) highlight independent travellers to Australia, exploring drive tourism expressed difficulty in the use of vehicles, navigating and driving rules. Ctrip.com, the most popular online travel portal in China, reported that it received several complaints from subsidized shopping (Mao et al., 2016). The Australian government, along with other related stakeholders, designed the China 2020 Strategic Plan to prepare

Australia tourism for the China market (Tourism Australia, 2011). The strategic plan aimed to identify the causes of the continuous perceptual gap between existing and potential Chinese tourists to Australia as a preferred tourism destination (Australia, 2020). It additionally aimed to plan non-legislative ideas and industry-based innovations to end unethical business operations by some tour operators in the Chinese tourism market (Mao et al., 2016). Service quality and marketing were identified as the major drawbacks to attracting and retaining Chinese tourists (Tourism Australia, 2020). The factors influencing the attractiveness of different Australian regions include marketing diversification of product offerings, theoretical and practical contributions coupled with appealing tourism infrastructure (Cao & Yang, 2016; Guo & Chen, 2016).

Dai et al. (2017) argue that a potential growth market for the tourism market lies in independent travellers motivated by Chinese students inviting their visiting family and friends, spawned from the old pattern of group-based, long-haul Chinese travel. The strong links between Chinese international education and inbound visitations further support the evolution from a group travel structure to an independent based structure which is becoming solid in Australia (King & Gardiner, 2015). According to the Australian Government Department of Education (2019), between 2018 and 2019 international students increased by 10% with Chinese contributing the biggest share of close to 29%, supporting King et al.'s (2015) claim that international students are laying crucial ground-work for the coming generations of Chinese travellers.

According to Chan (2016), group tourists' reasons for choosing certain Group Package Tours (GPT) were based on accommodation, price, itinerary and the availability of a Chinese tour guide. In his findings, Chan (2016) claims that a few tourists selected country features as a constraint in preferring certain tours. Bookings were done with a travel agency, either by the tourists themselves or by friends and family living or studying in Europe. Availability of information before travelling was limited to the travel agency's website, advice from family and friends, and online blogs. The group market tours in Europe mostly give the tourists a homelike environment providing a rebuild and imitation of their European homes. Whilst travelling most of the routes provided, the group tourists in Europe are presented with an indirectly forced, superficial spending touristic scenario. Sightseeing of popular attractions and shopping were some of the main activities that made group tours more of an offer-driven nature, instead of experience-driven one (Pendzialek, 2016). In the same vein Rothlin et al. (2016) claim tour operators for Chinese group tours have created a bad reputation for lacking flexibility, directing tourists to forced shopping and uninteresting places so they can get kickbacks.

2.3.4 Tourist profile, market structure and expenditure

In profiling the Chinese tourists that visited the USA, Liu et al. (2016) described a shift in the tourists' types and intentions of their visit. From their research, they described the 19th-century tourists as middle-aged, wealthy, male dominant and educated who would visit for business and for long periods stretching up to a month.

Liu et al. (2016) identified three Chinese tourist groups based on their intentions of travel, these were: "the Enthusiastic, High Brow, and Reluctant travellers". Other tourists' intentions of travelling to the USA included novelty, fulfilment, relaxation/escape, entertainment, prestige, knowledge and job fulfilment. Pendzialek (2016) identified similar but different market segments of Chinese travellers such as "Entertainment/Adventure Seekers," "Life-seeing Experience/Culture Explorers," and "Relaxation/Knowledge Seekers". Mass travellers in the leisure segment were described to be mostly travellers interested in deep sightseeing but with next to no travel experience, highly price cautious, unable to speak foreign languages thus unable to face the destination alone, and felt safer in a group. Contrastingly, the "FIT" tourists are returning tourists or experienced travellers that initially travelled in groups and are now searching individual explorations. FIT travellers are highly tech-savvy and have travelled outside of China often because of their studies (Fugmann & Aceves, 2013).

The UNWTO (2012) segmented the European Chinese travellers market into five categories: (a) "traditionalists", can be equated to mass travellers' (b) "wenyi" artistic youth, young Chinese with westernized, unconventional behaviour; (c) experienced-centred, are interested in the travel experience and whole process and journey and do not value the emotion attached; (d) "hedonists", are the materialistic tourists who enjoy having a good time, eating well, the luxury shopping, do not value scenery; and (e) "connoisseurs", have solid plans of the activities and places they want to see and foods to try, in an organised fashion.

Among the five groups of travellers, the traditionalists constantly had a major share contributing 70% of the market in UNWTO's "netnography" sample. The travel motivations of group tourists in long-haul travel to Germany were to improve their social capital. This is in concordance to the hierarchy-based society of China. According to the Chinese culture the further away one travels from home to a destination, the more the tourist's perceived prestige they receive from their peers. Pendzialek (2016) discovered that the travelling young Chinese motives were the discovering of study, work and business opportunities that travel represents. Additionally, these young Chinese travellers were constantly shifting between the lines of market segments to enjoy their time to the fullest during their holidays. Some young tourists took up GPT to fill the space of their planned routes, others stated that they could not find travel mates; therefore,

they are looking to enjoy the company of other Chinese and find new travel companions to accompany them in their future individual tours (Pendzialek, 2016). The Chinese outbound tourists have transformed remarkably to date, having much younger tourists, spending more, with more female travellers, and with education is a new important motive for travel (Liu et al., 2016).

The growth of outbound tourism that began about 10 years ago (in the '90s), is translating to more travelling teenagers emanating from the young children that travelled with their families since they were young. This is supported by the growing numbers of Generation Z (Gen Z) and millennials who seem to be now experienced and travelling as youths' groups, school colleagues and friends (Liu et al., 2018). One of Arlt's (2016) hypothesis is the possible emergence of Chinese wealthy pensioners that have more time to visit new and old destinations. An analysis of the demographics of Chinese tourists carried out by Arlt (2016) discovered that 60% of the tourists were Gen Z and millennials that seek more adventure, unique experiences, use more money on accommodation, and have longer stays. Extended holidays and the strengthening of the Chinese currency has stimulated the outbound tourism "Golden Week", a uniquely long holiday in the world (Wang et al., 2016b). The younger tourists prefer private tour guides, travel more in singles, and follow social influencers putting high trust in their inspiration.

Before the Chinese economic boom, the disposable income was one initial constraint for outbound tourism because of the lack of foreign currency that in turn resulted in stringent controls of foreign currency, which had been a national law for some years (Wang et al., 2016b). An analysis of the GDP of Asia by Dai et al. (2017) proposed substantial figures of "hidden income" in the eastern markets, assuming that the actual income of the eastern region is likely more than the published official figures. This was a common trend with data and observations linked to the consumer expenditure of the region. Such discrepancies support the official differing "estimates of outbound expenditures and numbers of outbound tourists where the latter out-performed the former" (Dai et al., 2017).

2.3.5 Chinese's propensity to technology

Tencent, one of the largest technology companies in China, designed WeChat as an instant messaging application but it is now used for e-hailing, making reservations, booking tickets, payments and much more. WeChat became the most used mobile application in China. The government in Shenzhen; a high-tech city now called "Silicon Valley of China", can send automatic and instant fines to citizens on WeChat for law-breaking offences such as jaywalking. The city also boasts of other technologies and integrated systems that include

facial recognition in public areas and QR code-based payments (Vance & Jeffries, 2019). WeChat Pay (WePay) has a rising footprint of online transactions currently amounting to one billion transactions a day and spreading across 60 countries (Yuan, 2019).

Although China has had a reputation of high imitation and high-risk Intellectual Property (IP) infringement recently (Prud'homme & Zhang, 2017; Wu et al., 2019), in 2011 China had the highest number of patent applications along with a high research and development expenditure. Several multinational companies have transferred research and development departments to China and other emerging economies' countries (Prud'homme et al., 2017). It is estimated that half of the innovation of the G20's researchers are from three countries: China (1.6 million), the USA (1.3 million) and Japan (UNESCO, 2018). The relocations can greatly influence the fashion and rate at which new technologies are adopted, and developed concurrently, minimising the tensions of financial repatriations and increasing job creation as seen in the recent setting up of offices and data hubs in Africa by big technology companies such as Uber, AWS and Google (Kshetri, 2013; Agrawal, 2015).

Innovation has a multiplicative effect on the development of a country as it pushes people to come up with new methods, services and products that direct economic growth and enable countries to tackle modern challenges, such as global health, climate change and increasing transparency (Wu et al., 2017; Edelenbos et al., 2018). To be able to build innovation a country needs a solid education system, this has pushed most countries in Africa to support Science, Technology, Engineering, and Math's (STEM) education initiatives (UNESCO, 2018). The potential of a country to leverage its potency for innovation lies with its local education system (Edelenbos et al., 2018). A well-learned workforce is key to scientific and technological discovery, which can drive countries to the peak of the evolving innovation-based global economy. This drive is peculiar to the Chinese economy as it fights to keep its country at the top of the global value chain (Chatterjee & Sahasranamam, 2018). Coupled with a high literacy rate of 95% (for the ages 15-65), China also accounted for the largest number of students going to study abroad in 2015 (UNESCO, 2018).

2.3.6 Chinese technology and its use in Western destinations

Most destinations are challenged with marketing outside their usual traditional markets; however, several countries have used social media as an easy marketing tool with a direct channel of influence (Ong et al., 2018; Vecchio et al., 2018). Western countries have been noted for building 'tourism and tourists' that lack understanding of other communities' perspective and building tourism grounded in "Western economic rationality" (Pike & Bianchi, 2016). As mentioned earlier in this paper, Australia is one of the few destinations that became

popular through the use of social media in China (Tourism Australia, 2011). According to Ming Foong, the managing director of travel Travelport, the future of travel is becoming very personalized, dynamic and digitally linked. He also highlighted the innovation gap, citing China as the leader in technology and travel trends. Ming Fong hinted China's digital financial migration plans which aim to achieve a financial cashless society (Ellyatt, 2019).

Pendzialek (2016) recommends European tourism stakeholders to keep abreast with Chinese tourists through following trends on the Chinese social media sites, which are a part of the marketing channels accessed via the use of UGC. The difference in marketing in social media has been termed as "the great firewall of China" (Adyen, 2018). Sina Weibo is a microblog that was once the most widely used tool by European countries to market their cities to the Chinese tourism organizations. Later on, in 2011 WeChat was launched solely as a chat-app, but by 2015 it had grown to be China's leading social media app, with embedded applications (Cheng, 2018). In tourism, WeChat has incorporated embedded apps by using QR code-based functions to identify the vast in Flora that attracts tourists, booking airplane tickets and formal brand marketing of products and services (Jia & Ling, 2019). Most travel bookings and online payments are now done on mobile devices. Between 2014 and 2015 China's online travel demographics shifted to having most travel bookings and arrangements done by females and independent travels have also risen, shifting from group travel as mentioned earlier (Chen et al., 2016). Ctrip has been the leading OTA in China and is ranked second largest in the world after Booking.com, with their shared interests linked to Baidu (Law et al., 2009). It also offers flexible services, virtual tours, and emergency aid.

Although several travel brands and European destinations are now using digital marketing to reach the tech-savvy and mobile Chinese market, their first step in providing for this digital footprint has been offering Mandarin supported products (Vecchio et al., 2018; Xiang et al., 2017). Pendzialek (2016) discovered that although several organisations had a one-to-one translation, the services were not culturally designed to Chinese needs. The information lacked the deep, native smart architecture of Chinese technology.

Despite several tourism research's emphasis on the designing of sophisticated technological platforms, thorough research on smart tourism from the traveller's point is quite shallow (Wang et al., 2016b). Bridging the gap between China's technology and the Western countries' is crucial as China is the source of most technologies and a pioneer in shared mobility services such as the dock less bike-share applications now spreading in cities around the world (Arlt, 2016; Wu et al., 2019; Savills Research, 2019; Yuan, 2019). Mobility technologies were developed to reduce and control congestion. According to Savills Research (2019), Asian cities

have the leading affordable metro systems with state-of-the-art systems furnished with state-of-the-art air conditioning and communications onboard.

Hongshan Zoo developed a smart application to monitor and control tourist movement, provide individualised itineraries, and smart self-guided tours (Wang et al., 2016b). According to Wang et al. (2016a), the most vital elements influencing the smart experience for tourists are a homepage, smart transport-scheduling, mobile payment, personal-itinerary design, tourist-flow monitoring, free Wi-Fi, smart cards (bands), online information access, crowd handling and intelligent-guide system. Barth et al. (2017) recommended giving priority to these elements when developing a successful Smart Tourist Attraction (STA).

For every big Western tech company, China has its equivalent: US has 'FAANG' (Facebook, Amazon, Apple, Netflix, and Google) and China has 'BAT' (Baidu, Alibaba and Tencent). Other mobile news, e-hailing and tourism apps are coming up and taking their share into the markets (Savills Research, 2019). To support and promote Chinese travellers' shopping in the US, several shops have included UnionPay, China's most popular payment system, and Mandarin language support (Fang & Zhu, 2019). Alibaba and WeChat were the first to offer mobile money services, launching Alipay and WeChat Pay respectively. They became the two main forms of payment methods in the Chinese mobile payment market until recently when UnionPay was launched (Yuan, 2019). It became the most popular mobile payment platform due to its high reliability and security. UnionPay processes transactions using an interbank exchange backed up by the Peoples Bank of China. It is now used in close to 200 countries and Quick Pass is UnionPay's contactless payment. Yuan (2019) critically claims that mobile payments play a crucial role in bridging the gap between the East and the West. He further proposes that removing barriers would assist in reaching Chinese tourists, as well as using these payment systems as a marketing channel in the process in the same way they are used in China.

2.3.7 The future Chinese tourist

Most studies support that China's outbound tourism is still in its preliminary stage of development (Chan, 2016; Chen et al., 2016a; Ying et al., 2016). The widening of Chinese outbound travellers will bring the "Third Wave" of Chinese tourism, being attributed to a big shift in demographics of Chinese travels as the international travel perception changes (Arlt, 2016). Frequent international travellers can be expected from various demographic sectors. It is uncertain whether the world's tourism industry will take China as a long-term future market and adjust their service to suit Chinese expectations, or if the Chinese tourists will have to bend drastically to suit the West (Pendzialek, 2016). The world is "shrinking" due to increased

travel, easing increasing reach of new markets, such as India and China, pushing travel brands and stakeholders to offer truly global channels beyond the locality of the consumer (Pencarelli, 2019:11; Katsoni, 2016; Inversini & Rega, 2018:4). Technology is increasing the reach of information to tourists, enabling them to prepare for adverse weather, disruptions, and delays of transport that may occur throughout their journey (Fermoso et al., 2015). First-time travellers will change from group tours to individually-organized "semi-self-organized" customized tours, with different levels of flexibility of itinerary of the vacations (Chen et al., 2016a). However, Xiang (2015) argues that the mentioned independent travel for China is very much not "fully independent" because the Chinese tour operators are still the crucial connection in the supply chain. Although China only allows tour operators from ADS approved destinations working in joint ventures with Chinese travel agencies, Parulis-Cook (2019) argues that this may change, starting with Beijing.

China's tourism evolution path has been different and more complex to the rest of the world due to its economic, historic and cultural dynamics (Mao et al., 2016). Although studies in China's outbound tourism market's characteristics are financially inclined to shopping in comparison to other cultural activities, Dai et al. (2017) argue that this behaviour will mature to a stage where it would focus more on enjoying the travel experience. When high outbound tourism becomes normal behaviour, the "irrational consumption" is expected to become rational (Dai et al., 2017:256). Arlt (2016) predicts that personalized and flexible tours will continue to increase and engulf more than 50% of the market in terms of expenditure and profit. The growth of these markets might destroy the stereotyped Chinese tourists who move in groups, pause for quick photos at different sights, prefer Chinese food, are generally loud, ill-behaved, and conscious spenders on anything other than shopping (Arlt, 2016; Ying et al., 2016). In addition to the changes mentioned in the development of China earlier in this paper, Mao et al. (2016) recommend research that focuses more on new markets, such as green segments in the Chinese market and socially responsible tourism products for the Chinese. Qiu et al. (2016) predict similar trends of growth of China's outbound tourists with individual travels to Western countries, Asia and South eastern Islands.

2.3.8   Chinese tourists in Cape Town and Africa

Several researchers have investigated Chinese' preferred tourist destinations around the world but very few have researched African destinations as a preferred destination for Chinese tourists (Jiang, 2008). Although no African country has gained significant popularity to the Chinese tourists', forecasts indicate South Africa, Nigeria, and Angola to be the most visited in Africa in the future (Chen et al., 2016a:377). Nigeria has had the most Chinese visitors whilst South Africa had the second highest with the fastest growth rate (Chen et al., 2016; Liesl,

2017). China is Africa's biggest economic trading partner and the biggest investor in infrastructure (Liesl, 2017). According to a survey by Brand SA cited in PWC's (2018) report (PWC, 2018), Chinese tourists identified South Africa for its medical tourism and mining business. Smith-Höhn et al. (2016) discovered that Chinese tourists spend more than the average tourists from other BRICS countries, using their money on jewellery and luxury goods. China National Tourism Administration (CNTA) published the Tourism Etiquette Rules for Chinese Citizens Travelling Abroad in 2006 to aid in making Chinese tourists safer when travelling due to the love and hate they have received around the world (Zhang, 2016). As stressed in this paper, China is one of the few targeted emerging markets of South Africa being strategically promoted by SA tourism. The Chinese government is working with other countries to strengthen ties, educate the people of China and to create laws that protect their citizens when abroad using risk warning systems.

2.4   Smart city – Smart destination

The previous section of the literature review focused on China and Cape Town's socio-cultural background and tourism. This section stretches several integrated aspects of tourism and technology that are crucial in achieving a successful smart destination. Fig 2.3 shows a logical hierarchical structure of this section of the literature review. The framework of the literature review follows the framework of the dimensions of the smart tourism destination suggested by Boes et al. (2015) in Fig 2.2. Hamzah et al. (2016) argue that a city's smart model may not be applicable in a different city as the main functional roles determine the ideal model for a city.
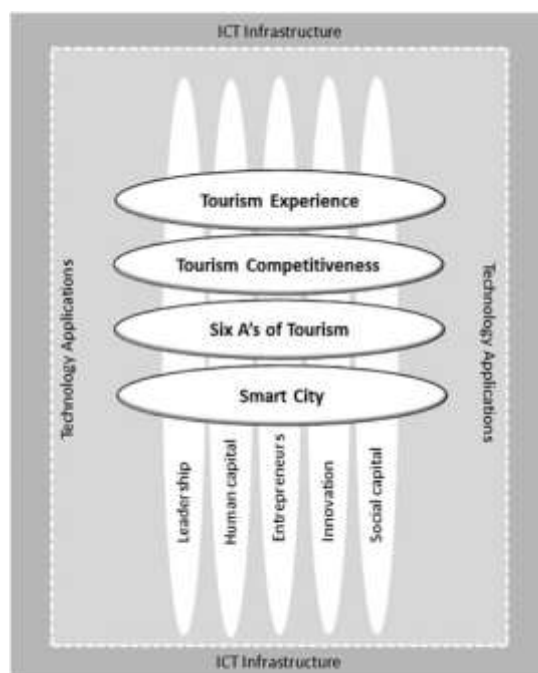
Figure 2:2 Framework for the dimensions of the Smart Tourism Destination

(Adapted from Boes et al., 2016)
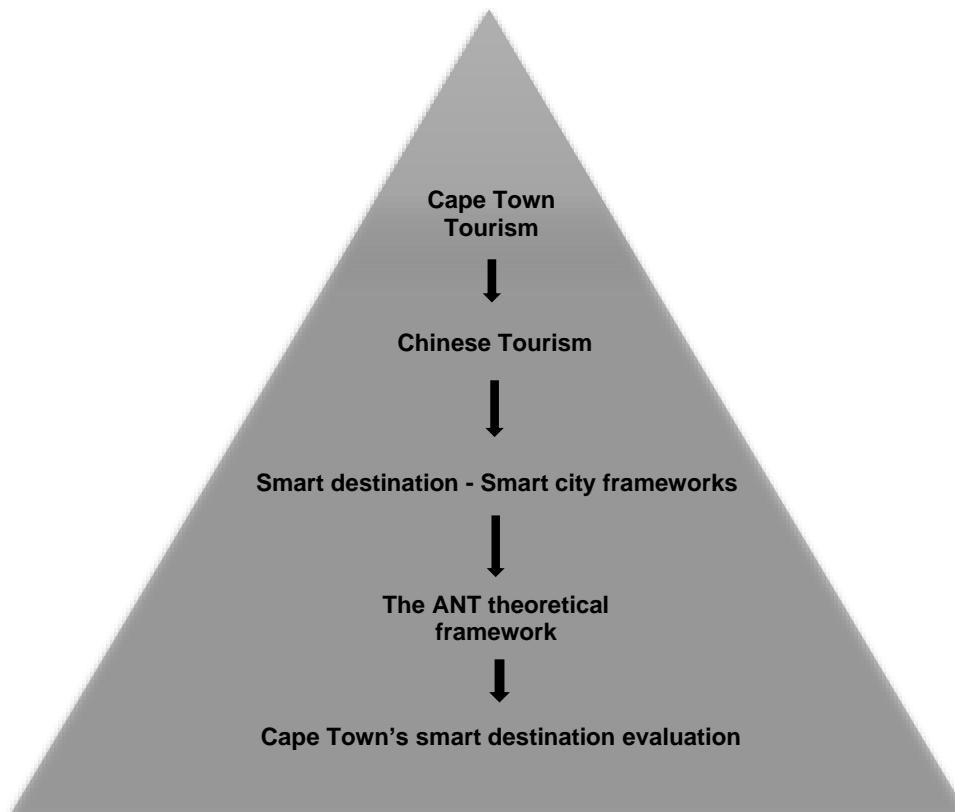
**Figure 2:3 Framework of the literature
review**

(Source: Author)

Drawing from this, a spatial extensive systematic analysis of frameworks was cross-referenced towards achieving the research objective. The framework of the literature adopts the same tenets from the framework for the dimension of the smart tourism destination and applies them in a simple linear fashion. This section takes credit of the incumbent smart city efforts in Cape Town and a theoretical lens of applying the smart city frameworks in tourism experience. Although the smart city and smart destination terms are used interchangeably throughout this research, the following sub-sections will distinguish the different dimensions of the two in detail.

A smart destination is: "An innovative tourist destination, built on an infrastructure of state-of-the-art technology guaranteeing the sustainable development of the tourist area, accessible to everyone, which facilitates the visitors' interaction with and integration into their surroundings, increases the quality of the experience at the destination, while also improving the quality of life of its residents" (Ávila et al., 2015). The smart destination concept is a spinoff of the smart city that pays more focus and includes tourist and the tourism environment under the same undercurrents of a smart city (Yavuz et al., 2018). The smart city concept is evolving to include 'knowledge city', 'intelligent city', 'digital city, 'information city', and 'ubiquitous city (Dai et al.,

2019; Barth et al., 2017; Lee et al., 2011)'. Spil et al. (2017) suggest that the smart city model will assist in countering the biggest current and future problems of environmental issues such as energy and mobility. Research in smart city paradigm aims to raise awareness of the need to shift focus from isolated technological reforms to urban outcomes (Allam & Newman, 2018).

Pencarelli (2019) defines the current stage of smart tourism as tourism 4.0, a digitalised tourism operating in the 4th industrial revolution ecosystem. According to Pencarelli (2019), the fourth industrial revolution originated in Germany, encompassing an array of technologies that include (IoT). The use of smartness in tourism facilitates smart principles to the tourist experience through the trending technologies offered in the smart service ecosystem, creating the novelty "technology-enhanced experience" (Femenia-Serra & Neuhofer, 2019a). In recent studies, Fabry and Blanchet (2019) explain the concept of smart tourism and smart destination as two important, yet different levels. Smart tourism is the application of technologies to enrich the tourist experience before, during and after travelling (Buhalis & Amaranggana, 2015). Smart destination is the application of smart principles by smart city stakeholders in the destination (Gretzel et al., 2015a). Technology-enhanced tourism is the centre of the smart tourism experience which has also been termed as the digital experience (Pasanen et al., 2019). The digital technologies enable tourists to utilize a wide variety of options before travelling from the planning phases until they have returned from travelling.

Pencarelli (2019) posits tourism service providers should move from a commoditized offering to a more experiential driven offering. Before travelling, tourists get primary information from friends and family/relatives or previous experience and verify this using digital devices on social media, websites and applications. The tourism marketing organizations and hospitality can market not only through websites but third-party applications, providing real-time promotional offers and reaching niche markets of tourists (Yavuz et al., 2018)

The Web4.0 technologies enable DMOs to provide a simulated experience of their smart destinations visit through virtual reality. The Gen Z is highly associated with the use of social media sites and the more gamified users are seeking even more (Parapanos & Michopoulou, 2019). Social media platforms are being applied for alertness in cases of terrorism, adverse weather, crime alerts and health outbreaks assisting in raising solutions quicker. In hospitality, accommodation providers can process and check-in guests using smartphones without any physical contact. Digital tourists provide feedback to DMO's during their travel through UGC, sharing their experience through hashtags to hosts and friends (Pencarelli, 2019).

There is a broadening gap between the branded smart city mentioned by corporations and the UN's perceived development to the concept of smart city. The U.N's smart city conceptualization requires more "inclusive, safe, resilient, and sustainable" city (Allam et al., 2018). They argue that the smart cities that have been developed in practice are an extremist structure that operates in isolation and are unable to accommodate new inhabitants. Allam et al. (2018) propose the incorporation of the U. N's Urban Sustainable Development Goals' targets in smart cities, raising the need for the smart city phenomenon to be revised to be more than a corporate branding war. The UNWTO World Conference on smart destinations acknowledges the role of smart destinations in achieving the 2030 Development Agenda (UNWTO, 2017). Smart destinations promote tourism, consequently promoting economic growth along with environmental and socio-cultural development (Parapanos et al., 2019).

2.4.1 Smart city development in BRICS' countries

Table 2.2: Smart city initiatives in BRICS countries

Country	Smart city developments – Projects	Initiatives and objective
Brazil	Transparency Brazil (Alexandre et al, 2015), Intelligent operations Centre (IoC)	Open data is collected and used to predict when floods might occur, prepare by evacuation (Berst et al., 2014)
Russia	Skolkovo Innovation Centre	Green physical planning (Angelidou, 2014)
India	More than 100 smart cities, with high-technology capabilities, (Tiware, 2014). - Transparent Chennai	Sharing information and new data with the population and involving them in planning and city governance.
China	200 Pilot Smart Cities population (Liu and Peng, 2014), Citizen Cloud in Shanghai	To assist in planning for growing urban population and its medical and education plans. A platform for smart city services.
South Africa (Cape Town)	CoCT - Project Khulisa (Tammy Evans, 2015), broadband projects, Digital City strategy (Green, 2016).	Smart Parks, Open Data

The BRICS countries provide a small pool of strategic benchmarks and opportunities for Cape Town and smart city developments as it has a collection of diverse cities that include China. Table 2.2 above shows some of the smart city initiatives in the BRICS countries. Similarly to South Africa, Brazil is a developing country and shares similar smart economic indicators (Alexandre et al., 2015). Brazil's IoC managed to improve the country's response times to crime and safety emergencies by 30 % (Ávila et al., 2015). While Mostafa et al. (2015) raise concerns about the growing influence and power of China, Agrawal (2015) argues that South Africa has more to gain as a strategic partner with China in the BRICS. According to Agrawal (2015), exploring other sources of economic growth would attract direct foreign investments.

A survey by PWC (2018) projects that South Africa's tourism will increase in the future because of all the BRICS countries' strategic partnerships and relations with South Africa's tourism.

2.4.2 Smart city services in China

China has embraced the concept of smart cities and is making epochal developments and investment in many cities (Femenia-Serra et al., 2019c). Shanghai, the most developed city in China and one of the leading business hubs in China, implemented the i-Shanghai project which rolled out Wi-Fi hotspots in the city and rural areas to bridge the digital divide (Wang et al., 2016a; Yu et al., 2019a). The Citizen Cloud project provides citizens with a platform to access the city's smart services. According to Traunmüller (2017), the modern city will operate using IoT, Open Government Partnerships and Big Data inter-networking of physical devices, embedded with electronics, actuators, sensors, software, and network connectivity to allow them to collect and exchange data in real-time. Smart city services can be developed by a public authority, a partnership between private technology companies and city authorities or other forms of relations. Spil et al. (2017) recommend cities to design formal committees to manage and support smart technologies. The writers further explore several types of partnerships that cities have adopted towards developing smart cities. Likewise, the Chinese government in partnership with Alibaba and 13 other companies are delivering smart services through public private partnerships in Hangzhou (Ying, 2017).

2.4.3 Apps bridging the gap over the great firewall of China

Although China represents a huge potential market for tourism and other industries, several writers have acknowledged that China has a locked digital system which has been termed as "The Great Firewall of China" (Adyen, 2018). Although these restrictions have prevented Western social media applications and payment platforms from penetrating the Chinese market, various organisations are slowly bridging the gap between Chinese technology and the rest of the world. As previously mentioned, one of the largest technological barriers between China and the rest of the world lies in the payment systems. UnionPay facilitates international payments, encouraging the Chinese to spend more abroad (Yuan, 2019). Although there are several legislative barriers, the power to spend and use western technology, Chinese tourists have been known to be attracted to western fashion and technologies, increasing demand for learning English and research and studying abroad (Teo, 2017; Kirby & Eby, 2016). These regulations and environmental factors need to be considered to develop a successful technological platform in China. The eastern market has a deferential preference in UI/UX designs, different online-market stores, localized language and the need for integration with WeChat (Fang, 2020).

2.4.4 Smart city frameworks

Despite the lack of a universal definition of a smart city, several conceptual frameworks have been suggested to explain the architecture of smart city design. The International Telecommunication Union (ITU), an arm of the UN, designed the United for Smart Sustainable Cities (U4SSC) indicators as a tool for assessment achievement towards smart city objectives and their alignment with the UN's SDGs (Imran et al., 2020). More than 100 cities have adopted the U4SSC Key Performance Indicators as part of a collaboration driven by ITU within the framework of the U4SSC Initiative (ITU, 2020). The process of achieving a smart city is different for every city, therefor the U4SSC provides a guide in the digital transformation of services. ITU research also focuses on low- cost solutions to support small developing cities and developing countries. According to Shen et al. (2018), the Shanghai Pudong Smart City Development Research Institute suggested a smart city indicator system for use in designing a smart city. The designed model comprised of 5 indicators, that are similar to Cohan's smart city wheel, including education, social safety, smart infrastructure, services, and economic development.
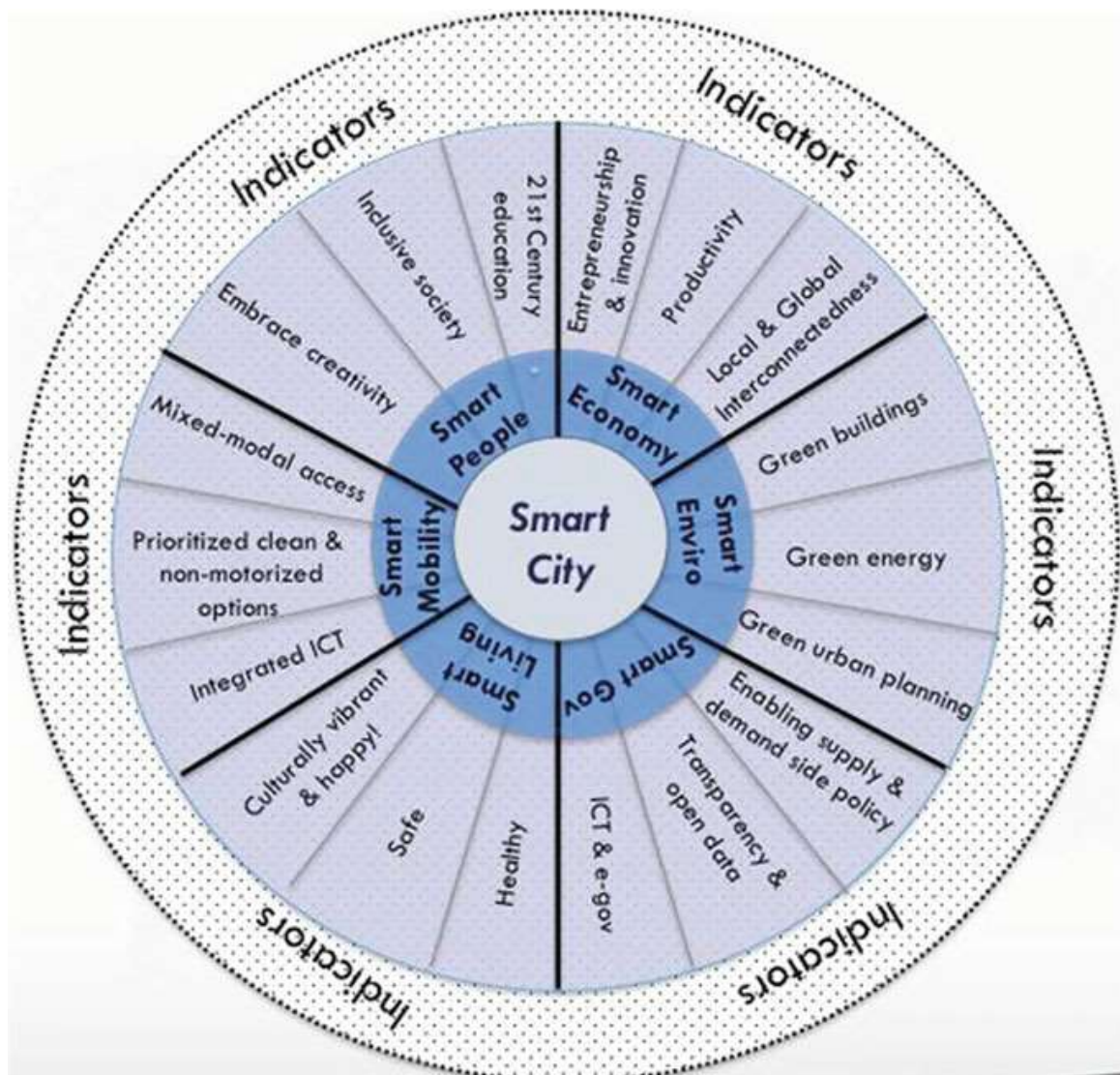
Figure 2:4 Cohen's Smart City Wheel

(Adapted from Cohen, 2014)

Despite researchers proposing several different smart city frameworks to better understand the development of smart cities' dimensions, most smart city frameworks allude to Cohen's smart city wheel (Govada et al., 2017b; Dameri, 2017; Hamzah et al., 2016; Başer et al., 2019). Cohen's smart city wheel is thereby an important foundation to smart city studies. The smart city wheel comprises of six indicators as in Fig.2.4 below and include (1) Smart Governance, (2) Smart Environment, (3) Smart Mobility, (4) Smart Economy, (5) Smart People, and (6) Smart Living.

The smart economy defines the technological environment in which business transactions take place, and its forces determine the price of products and services. The cost of products and services is a huge influencer on the citizens and tourist decisions (Govada et al., 2017b). It has been postulated that the smart city wheel is a process, therefore, it is constantly evolving with several dimensions that are integrated and work congruently (Bennett et al., 2017:7; Govada et al., 2017b).

Smart governance encompasses regulations, laws and the incorporation of these services. In the smart tourism context, this includes the procedures involved to obtain paperwork required to be granted permission to move to another country (Khan et al., 2017).

The smart environment dimensions are all the natural and non-natural physical elements that citizens and tourists must conserve and protect, balancing the harm from any forms of pollution. Smart technology allows managing consumption and controlling waste (Álvarez-García et al., 2017). The management of resources has drawn considerable interest in governing boards and an emerging niche market of "green tourists" and urban population (Booyens et al., 2016).

Smart mobility in transport services presents modern cities with several challenges that include reducing transport pollution, congestion, and improving reliability by multi-modal and dynamic transport information. Consequently, providing smart transport systems, smart parking and traffic management systems (Neirotti et al., 2014; Khan et al., 2017).

Govada et al. 2017 are of the view that the people are the core drivers and influencers of the smart city ecosystem and so suggest the smart city should focus more on people than being technology centred. The smart city requires residents and tourists who can embrace smart technology and respond with innovativeness (Sanseverino et al., 2018; Govada et al., 2017b).

Smart Living is the inclusion of social aspects of human life providing equality, upholding justice, safety, health and a decent standard of living (Govada et al., 2017a).

2.4.5 Applying (Sa)6 to smart destination experience and service delivery

The demand for personalised and cocreated experiences through the use of technology in tourism calls for more defined smart tourism designs with an intergranular perspective (Femenia-Serra et al., 2019b). The tourism environment is in continuous search of developing better experiences and seeking to understand the needs of the "new" tourists. To this end smart tourist attractions are being designed to provide easier access to information, better experiences and better value for money and time (Wang et al., 2016b). The smart tourism framework spawns from the smart city framework with similar main dimensions. It further adds more profound comprehensive aspects of the smart destination, smart business ecosystems and smart experience. Gretzel (2018) defines a smart destination as a combination of three components. The first component is the integration drive, to fetch and use data from the ecosystem and people. The second component is the use of trending technologies for collecting and processing this data to enhance the experience and the value to stakeholders. Lastly, the third component encompasses the sound focus on sustainability and efficiency. Smart destination designs in tourism systems should include design methods that can enhance the tourism experience.

The smart destination is an area that is still developing in research, lacking a standard definition that identifies a wholistic consolidation of destination management, urban planning, information systems and governance (Pencarelli, 2019; Behzadfar et al., 2017). Most Smart Tourist Destination (STD) definitions share common components of innovative technologies, a focus on socio-economic factors of habitats and real-time interactive experiences of tourists with the environment using digital technologies (Álvarez-García et al., 2017). Several writers are of the view that a smart destination must be designed to adjust and suit changing tech-savvy market demands using new technologies (Femenia-Serra et al., 2019c; Bélissent, 2010). Other writers posit it should further be able to "predict" and react to the needs of users in real-time, providing promotions, information, guides, and personalized itineraries (Jiang & Ke, 2019; Gomes et al., 2017).

Başer et al. (2019) explain the smart tourism architecture as comprising of the following six A's ((Sa)6): Ancillary services, Activities, Accessibility, Attractions, Amenities and Available packages. These dimensions are coherent with the attributes that influence the touristic experience that have been identified earlier. The individual indicators within the dimensions of the (Sa)6 are similar to the Cohen's wheel, therefore the Six A's would be a better tool in

evaluating the digital experiences in tourism as it offers a simplistic way for categorising the tourism activities and user end service delivery.

(Sa)6 has a broad variety of indicators that influence STDs, which have been used by researchers in categorising the levels and stages of smart city development (Yigitcanlar et al., 2018a; Marine-roig & Anton, 2015). The (Sa)6 adopts technology as an enabler that facilitates the touristic experiences using technologies such as wearable smart devices as a medium, enhancing physical senses of the body with the natural environment, and capturing accurate data on points of interest (Huertas et al., 2019). The table 2.3 below shows the factors that influence tourism experience classified under the indicators of the (Sa)6. Effective implementation of smart destinations relies on the integration of data sources and stakeholders and users and innovative collaborations such as consortiums and patronages (UNWTO, 2017).

Table 2.3 (Sa)6 and factors affecting tourism experience

Smart attractions	Smart accessibility
Artificial attractions	Transport
Heritage attractions (Culture, Meals, Lifestyle)	Wi-Fi and Broadband Connection
Special events	Information
	Social media
	Applications
	Language Barrier
	Weather
Smart amenities	**Smart ancillary services**
Hotels and Restaurants (Information on Operating Hours, Prices)	Medical Services, information and facilities
Restaurants (Information on Operating Hours, Prices)	Local community and citizens
Nature Waiting Time (Waiting times, Delays and Long Queues)	Lost Luggage
Transport (Waiting times, Delays and Long Queues)	Websites
Smart activities	Smart packages
Tourism Activities (Adventures, Relaxing)	Applications
	Tours
	Tourist cards
	Transportation - Navigation Security Concern
Smart activities	**Smart packages**
Tourism Activities (Adventurous, Relaxing)	Transportation
Problem in Navigation Security Concern	Applications
Less Informed (on Opening Hours, Prices)	Tours
Waiting Time (Delay, Long Queue)	Tourist cards
Lost Luggage	

Service Expectation (Staff personality, tidiness)	
Weather	
Language Barriers	

Tourism destinations must address factors that positively affect the tourism experience and reduce the negative tourism experiences that are likely to occur. Smart tourism experience transfers the experience from the physical realm to online virtual platforms co-creating personalised experiences (Femenia-Serra et al., 2019c). Co-creation can be established through open innovation as organisations do not rely on their own information but the information provided by users themselves (Gretzel et al., 2015b). Virtual tours provide an alternate experience before visiting and encourage tourists to visit if the experience matches expectations. Singapore and Japan are among the nations that are building virtual reality space at a national scale, to provide a national virtual experience (Kim et al., 2017). In a review of smart destination conceptualisation, Femenia-Serra et al. (2019a) discovered that the smart destination concept is becoming more practical in Spanish cities as it is being used to implement smart principles. The Tourism Department of the city of Porto offers an official tourism app that offers support services for safety, culture, transport, art and events (Liberato et al., 2018). Chung et al. (2015) claim that successful implementation of AR in the eastern and western cultures is heavily dependent on the application of its aesthetics that will create a favourable perception and promote more usage.

In a recent analysis, Nikitha and Malathi (2019) discovered that companies are facing a dilemma when choosing the right channels to engage customers. It was discovered that the most-used channels were emails and push notifications. Push notification service is a context-sensitive platform that delivers a unique personalized informative message to users' mobiles (Werthner et al., 2015b). Although the digital disruptive industry is being dominated by intermediary applications (Ojasalo & Tähtinen, 2016), a study by Tripathy et al. (2018) discovered that guests that use a hotel's mobile app derive greater guest satisfaction than those that use third-party applications.

Most of the objects in the IoT network are smart objects that provide rich data processed to make richer user experiences. In recent studies, Başer et al. (2019) empirically analysed the role of machine learning, computational intelligence, cognitive networks and context-aware computing in smart cities. These technologies enable data processing to add value to IoT based smart cities and applications. Their research deduces that for IoT to be implemented well in tourism it has to go through tourism infrastructure construction, tourism information data construction, and tourism service platform construction for objects such as mobile devices, radio-frequency identification (RFID) tags, sensors and actuators etc. In the same vein, Gretzel

et al. (2015b) define sensors as "the blood" of Big data and further advise the need for data creation, storage, processing and utilisation as critical steps for smart tourism environment construction. IoT and smart devices create a digital footprint that enables city planners and designers to trace tourists' trends and directions (Femenia-Serra et al., 2019a).

The Department of Tourism and other stakeholders of the city of Porto launched the Beacons project. The project uses tourism data for promotions, virtual reality, augmented reality (AR) and other technologies. The project acknowledges its key strategic source markets to be the European and the Nordic markets. The beacons project uses QR codes, open data and big data supported by a wide Wi-Fi coverage and wide distribution of tourists stands. According to Liberato et al. (2018), an association of universities and public and private companies are developing the city of Porto into a live urban-scale laboratory, making Porto one of the most innovative cities in Europe. Tourists can use the application throughout their tourism journey from planning to departure (Liberato et al., 2018). The Dubai City designed the Smart Tourism Dynamic Responsive System (STDRS), which is a unique response system that aims to increase safety by collecting real-time information and providing responses in different tourism functions (Khan et al., 2017). Context-aware technologies assist in anticipating tourists' needs and assist in instant decision making creating a richer experience, as tourists and smart citizens seek more real and lively solutions (Huertas & Marine-Roig, 2015).

The touristic experiences are no longer solely dependent on tour guides, as ARs are complementing and replacing physical guides (Hunter et al., 2015). Pencarelli (2019) suggests a "digital travel friend", which is an interactive electronic agent that assists tourists with information in real-time. This agent can be application-based or on a wearable device. Computer simulations in 3D environments of a place are experienced through an immersive or non-immersive environment, enhanced by a wide variety of technologies including text audio and videos (Başer et al., 2019). Electronic Customer Cards can be embedded with Near-Field-Communication (NFC) and QR-code enabling consolidated information gathering, promotion and discounts in tourism (Kolas et al., 2015:75).

A survey by Werthner et al. (2015) discovered that users used social sites the most when travelling for information, reviews, location and credibility when visiting restaurants, hotels, attractions etc. Social networks generate a lot of data that can be used to develop tourist destinations (Gomes et al., 2017). DMOs now carry out Social-context-based – Mobile marketing (SoCoMo)' personalized marketing, which merges smart mobile devices, social media and marketing (Pencarelli, 2019). Social media networks are an information source for realistic reviews before visiting a place. DMO's embed their websites with social media so

users can keep updated on services. Governments must embrace technology and develop skills to use technology to improve citizen participation through the use of social media (Spil et al., 2017). Constructivist research in smart tourism argues that soft power resources in smart tourism and smart city are the most influential aspects in making smart tourism a success (Hunter et al., 2015). Soft power demands are addressed by open government initiatives that seek to make government decision making roles disseminated to the public. Hou (2017) further suggests that open government buttressed by blockchain technologies will develop solid trust between the government and citizens. Whilst politics, culture and policies determine how friendly a destination is, and particularly impact the negative experiences (De Man, 2018). The development of smart destinations should consider sustainable development that takes into account local citizens, resources and socio-cultural needs along with service providers, intermediaries, support services, social media, natural entities, public sector and digital networks and infrastructure.

The digital platform and IoT technologies provide the basis by which the individual aspects of every dimension of the smart city communicates. There are vast digital innovations developing that have not been addressed in this research. With the guide of the (Sa)6, this section has shown that most trending technologies can be applied in tourism through innovation. The various technologies are all dependent and cannot be categorised to a single dimension of the (Sa)6. The relation between different entities changes the perspective of the smart tourism supply chain. The following section adopts a theoretical framework to explore the eclecticism of a smart destination.

2.5   The theoretical framework underpinning this study

A theoretical framework shows an understanding of concepts and theories that are important to the field of research and that link to the wider areas of ideas in question, pointing out the key variables that motivate a phenomenon and empirically show the need to examine the key variables (Swanson & Chermack, 2013). This section presents the theoretical lens underpinning the study of smart destinations inferring to previous studies. Sustainable smart cities are a product of the integration of different complementary linkages created between actors designed to create solutions through ICT (Werthner et al., 2015a).

The literature in the previous sections stressed on the imperatives of the study of the orthodox smart destinations. Prior to analysing frameworks and models that have been adopted in smart cities and smart destinations in Africa and Cape Town, this section develops on the construct of the literature to derive a logical framework, that will guide in assessing the applicability of the same dimensions from historical literature.

Most theoretical frameworks in smart city literature are designed to measure and scale the levels of development of smart cities (Boes et al., 2015). Other theoretical frameworks in tourism and smart destination aim to assess factors that motivate tourists to visit a destination. This section identifies a framework that will guide in the development of Cape Town as a smart destination. Due to the lack of a universal smart city definition and framework, Dameri (2017) uses a descriptive framework based on the common dimensions of a smart city. However, the existence of several models of smart cities with analogous perspectives and ideas call for a need for a theoretical framework to define a lens of how to screen the outputs - visuals and apply a clearly defined model that suits this research.

Although it lacks a wide application in smart cities, Lim et al. (2017) commend the Socio-technical Systems (STS) theory in illustrating the paradigms of smart tourism design. Boes et al. (2015) adopted the Socio-technical Systems theory as a theoretical foundation to conceptualising the smart tourism destination. Although the writers mentioned a deep and entwined relationship of entities, their research identified a simple relationship between the social capital and the technical aspects of a study. Several researchers in tourism and smart cities have adopted the Service-Dominant Logic (SDL) research framework (Boes et al., 2016a; Wang et al., 2013; Dwyer et al., 2012). SDL aligns reasonably to the co-creation value in the STD and relation between different actors (Boes et al., 2016b). It postulates a smart tourism destination as having stakeholders that are dynamically interconnected by a technological platform in a digital ecosystem. Gretzel (2018) suggested that the SDL permeates the smart tourism destination to measure and define destination competitiveness. Other scholars have adopted the SDL to explain the chain of value created when tourists stay at different accommodations and the individual heterogeneous experiences that influence their perceptions of the services offered by a hotel (Xiang et al., 2017). In China, the SDL initiative was implemented to aggravate the development of information technology in the tourism industry as a government initiative to develop a leading smart tourism ideology in China (Wang et al., 2013). Regardless of these mentioned applications of the SDL in research, it has been identified as shallow in theoretical perspectives and lacking complexities of smart tourism destinations (Wang et al., 2017, 2013). Wang et al. (2013)(Wang et al., 2013) call for further consideration of STD's marketing implications and more rationale applications. In other research, Yigitcanlar et al. (2018) propose a multidimensional framework to understand smart cities and smart destinations. Similarly, to the SDL, the Actor-Network Theory (ANT) is comprised of actors that can relate to other actors in a heterogeneous and multidimensional network (Dedeke, 2017). This research therefore applied the ANT as a theoretical foundation of analysing frameworks of smart destinations.

2.5.1   The ANT theoretical framework

The ANT is a socio-technical theory that was designed to assist in explaining how scientific knowledge is concluded from the material and how new methods and actions become adopted and accepted by humans (Kien, 1999). It originated from the sociology of sciences to show how daily practices are linked to broader processes of transformation (Latour, 2005). ANT deems both social determinism and the technical to be flawed and suggests a socio-technical situation in which neither the social nor technical positions are privileged (Tatnall & Gilding, 1999). It takes the human and non-human elements called actors as the same since the separation of these elements is problematic. Additionally, Callon and Latour (1981) worked on the premise that categorical dualisms are theoretical and not essential in sociology, meaning that the macro and micro phenomena are not essentially different or separate but are part of the same component. The Actor-Network Theory seeks to discover new actors not yet fully accepted by adopting a pragmatic approach by exploring uncertainties that treat non-human actors fairly. ANT is based upon three principles, namely agnosticism, generalized symmetry and free association (Tatnall et al., 1999:958). In a smart tourism ecosystem, businesses must determine the following elements: "value network of the actor, resources and capabilities, customer value creation, the actor's logic that the actor has, and strategic decisions that the actor makes" (Gretzel et al., (2015c).

Conflicting viewpoints and arguments should be explained in the same terms maintaining a generalized symmetry between people and things of similar characteristics and roles defined by their relations to other actors (Kien, 1999). ANT emphasises one too many relations to simplify understating of the interactions with humans. The principle of symmetry between human and non-human elements draws inquiry of relations to the materiality between the people, objects and the activities in tourism. Objects are linked with the physical, static, natural and human-made materiality in tourism such as nature, hotels, cars and planes etc (Jørgensen, 2017). Objects also stretch to the non-physical such as media and information such as pictures, travel data, travel guides, maps, newspapers and train or airline itineraries. It seems difficult to differentiate the technical aspects from the way they are influenced by the socio-cultural background and from human interactions. Thus, what seems to be social, is partly technical and what may appear to be only technical is partly social (Delukie, 2009). Researchers claimed that all this takes place in a large confusing mess, what is termed as "messy networks", a fashion that is never linear nor logical. Although the Actor Network Theory stacks these uncertainties on top of one another to form one mess, through using the Actor Network Theory and having great patience, one can find clarity (Delukie, 2009).

According to Latour (2005), the free association makes no distinction in approach between the social, natural and technological. Viewed closely an actor isn't just an object, but an association of heterogeneous elements themselves making up a network to appear more like a single actor. These elements may be simplified, or black-boxed. To be black-boxed means that network actors are opened, and contents reanalysed fitting the idea that networks are reliable but can become unstable. The Actor Network Theory does this by making connections between controversies and following the links between the ideas (Kien, 1999).

Translation is a continuous process of defining identities and the requirements of linkages among actors (Dedeke, 2017). Callon and Lascoumes (2010) described translation as a process before the result. They bring up the term translation to describe this progression by outlaying three methodological principles. For a sociology of translation, they suggested that there should be an agnostic observation that the person doing the study should not believe the impossible. Researchers should not change the language that is being used to explain a phenomenon, whatever the participants are saying is the description of what's happening. This further drew out a principle of free association with the distinctions between neutral social phenomenon.

The smart tourism ecosystem comprises of actors that seek to improve the experiential value of tourism (Pencarelli, 2019). Features are assigned single actors, which unintentionally define new patterns in space of which they are unaware themselves. The actor-networks provide insights of processual change and development activities through self-organising and varying dimensions of the urban space (Cvetinovic et al., 2017).

Additionally, this theoretical lens mirrors innovative reactions to realigning actor-network elements to the impediments created by barriers in infrastructures, real estate and transport. The elements utilise big and open data with other technologies redistributing financial rewards to ordinary citizens and across international boundaries. They are however challenging economic governance issues bringing more instability and social pluralism along with a need for network connective design (Edelenbos et al., 2013).

The environment is evolving continuously, compelling actors to be constantly learning and changing, however the changes at times come with differing objectives, and this calls for actors to be aware of other actors and aligning towards similar objectives (Edelenbos et al., 2018). In a smart service ecosystem, any stakeholder can be an actor because their roles can change due to the interdependencies between producers, consumers and intermediaries. Gretzel et al., (2015c) suggest open innovation ecosystems that allow actors to co-create value by

sharing of data. The economic power in smart tourism services is dependent on the access of data (Rodger et al., 2009).

ANT can be a praxis in achieving smart city agendas in analysing and enlightening impediments that arise from the increased heterogeneous links between the social and physical dynamics of a smart city. It additionally shows how networks are developed and maintained, how they compete with other networks, and how they are made more sustainable over time. An ANT illustration at the local level with relation to the global provides different interpretations to structures, actions and processes to data determinism (Cvetinovic et al., 2017). This methodological theoretical framework is adopted in the evaluation of Cape Town as a smart tourist destination in the following section.

2.6   Evaluation of Cape Town's as smart tourist destination

Although the growth of smart tourism is gathering momentum around the world, research soliciting tourists' opinions when constructing STA's is limited (Jovicic, 2019; Inversini et al., 2018). The Cape Town smart city initiatives have been developing for more than a decade. Whilst there has been very little research on smart destinations in Africa, Gcaba et al. (2016) have recommended various IoT initiatives that can be implemented in Cape Town. Recent theoretical research has however focused on smart city initiatives in Africa and Cape Town. This section reviews the theoretical and practical contributions of smart city initiatives in Africa and Cape Town.

Mhangara et al. (2017) suggest a smart city framework that is suitable for developing countries and regions in Africa, particularly Cape Town. Nokia used a taxonomy of five pillars to assess the key parameters that are involved in developing a digital and smart city. The report measured the level of smartness of 22 cities of varying sizes and distribution, including Cape Town. The report concluded that although there were efforts towards making Cape Town a smart city, Cape Town was still in its infancy towards becoming a smart city (Green, 2016). This section picks up from the earlier sections that introduced Cape Town's tourism landscape, with an evaluation of the digital facet of Cape Town City and subsequently its smart tourism, exhibiting a holistic assessment of its smart destination. Although this research's focus is on Cape Town's smart tourism developments, city developments do not permeate in isolation. Several writers have researched the development of smart regions (Aalto & Montonen, 2016; Gaddi, 2016). Thus, it is paramount that smart city developments are carried out in unison standards with the country, region, continent, and the world. This creates a guide for benchmarking and opportunities for regional development. The previous sections have deduced a correlation between smart city designs and the UN's Sustainable Development

Goals (SDGs). A parsed, triangulation assessment of Cape Town's smart city that begins with a holistic view of the Smart Africa Manifesto, subsequently applying Nokia's taxonomy with Cape Town's digital city strategy concludes this literature review.

2.6.1 Smart Africa Manifesto

The Smart Africa Manifesto was established by the heads of state of Rwanda, Kenya, Uganda, South Sudan, Mali, Gabon and Burkina Faso in 2013 to promote socio-economic development in Africa through ICT (Smart Africa Secretariat, 2013). The Smart Africa Alliance collaborates with various stakeholders including the UN, the International Telecommunications Union (ITU), the African Union and countries leading in smart cities research such as China and Estonia to establish solutions for smart Africa. Smart Africa Manifesto's vision is to transform Africa into a single digital market, putting ICT at the centre of the national socio-economic agenda. The five-strong pillars of the Smart Africa Manifesto are (1) To put ICT at the centre of the national socio-economic development agenda (Policy), (2) To improve access to ICT, especially Broadband, (3) To improve efficiency, accountability and openness through ICT (e-government), (4) To put the private sector first, (5) To leverage ICT to promote sustainable development. These are supported by the four solid enablers: (1) Innovation communication, (2) Advocacy - capacity building, (3) Resource mobilization (Figure 2.5). The pillars and enablers allow the Smart Africa Alliance to position the right environment to encourage knowledge sharing, partnerships, job creation and entrepreneurship. The Smart Africa Alliance member states each champion a flagship project, which ensures that every segment of the digital agenda is catered for. It further ensures that member states share information and avoid duplication. Among these assignments South Africa was recently assigned to lead in the 4IR: Innovation and artificial intelligence initiative (Rukundo, 2020).
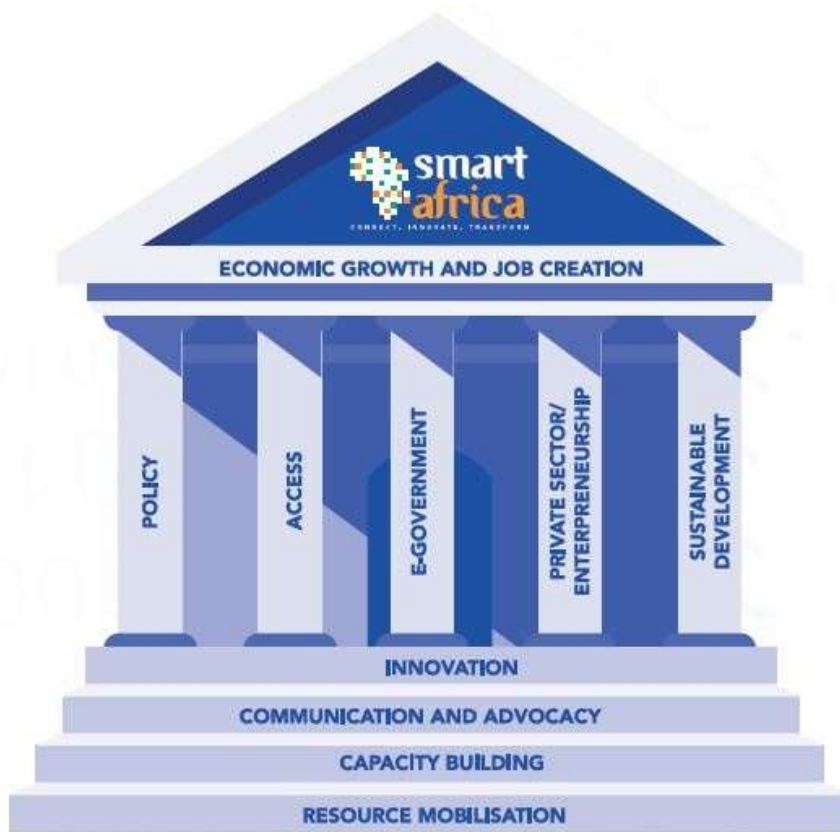
Figure 2:5: Smart Africa Agenda

(Adapted from Smart Africa, 2018)

The socio-economic development agenda aims to create opportunities, reduce poverty, and increase prosperity and productivity in Africa using ICT in sectors such as education, healthcare, business and agriculture. The smart alliance claims the high population of people below 25 years in Africa presents an opportunity to leapfrog in socio-economic growth using technology and to close the digital divide. An inclusive digital society can be created by focusing on how existing and emerging technologies can be effectively used to solve problems in African communities (Rukundo, 2020).

The principle of a key infrastructure to smart cities lies in the connecting of hospitals, seaports, airports and other public areas to fast and reliable broadband. Access to ICT, especially broadband can be improved through various private-public partnerships (Smart Africa Secretariat, 2013). One of the critical projects of Smart Africa is the One Africa network that aims to create affordable voice and data by eradicating roaming rates and cross border mobile payments to foster greater integration and free movement of people. This will subsequently boost trade, education for all through ICT, equipping and connecting primary, secondary schools and universities with digital libraries and electronic devices with broadband connectivity. Broadband access not only bridges the digital divide but boosts economic growth and creates employment. The Intra-African cross border connectivity project restructures

routing of data traffic within the African network avoiding redundant links that data currently follows out of Africa when routed between different African countries. This can be achieved by establishing local data centre infrastructures to ensure the retention of internal traffic within Africa, enabling the provision of services based on Multiprotocol Label Switching / Internet Protocol (IP/MPLS) and Fibre to the x (FTTx). 'Digital connectivity to drive socio-economic development' will be reliant upon Africa's readiness for 5G. This will revolutionise mobile connectivity across the continent and create a reliable platform for IoT devices (Patzold, 2019). There are active investments and initiatives to quickly remove bottlenecks from legacy systems and transition to an all-IP network (Smart Africa, 2019).

Accountability, efficiency and openness can be improved through ICT by developing and implementing national e-Government policies across Africa. Open Data ventures spearhead accountability and transparency, and improve decision making. International alliances with Tata and Estonia's ICT cluster provide opportunities to learn and emulate ideas in the African context. Estonia has been successful in implementing smart initiatives that include i-voting, e-residence, digital investments and e-government (Thurnay et al., 2017).

The fourth principle aims to put the private sector first by increasing access to markets and information for businesses. The private companies must become producers of ICTs rather than being passive consumers only. The private sector can drive economic transformation through partnerships, job creation, productivity and competitiveness enabled by technology and innovation. To achieve this, Smart Africa Alliance is providing tools and equipment for local innovation hubs with the necessary financial and business development, and technological abilities.

The fifth principle seeks to leverage ICT to promote sustainable development through resource mobilization, gender equality and bridging the skills and talent gap among its member states. Smart Africa established flagship projects that use technology to tackle climate change, promote clean energy, e-waste, urbanisation, disaster management and other environmental risks (Olivier Gakwaya, 2020). To allow for better and transparent governance across Africa, the Smart African Alliance proposes an inter-Africa platform for e-services – including birth registration, tax payments, e-learning, e-health, continental free trade, centred on a unique national identification system for Africa as a whole.

2.6.2 Cape Town's digital strategy and application

CoCT has spearheaded a pragmatic approach in planning towards developing Cape Town into a smart city. According to Mhangara et al. (2017), Cape Town's smart city strategy began in early 2000. The CoCT's Integrated Development Plan (IDP) was initiated in 2012 with several programmes based on the "five pillars of the future". The Digital City strategy was among the provincial smart city projects which are part of four key pillars.

Nokia in collaboration with Machina, conducted research on smart cities to provide insights on the process of becoming a smart city (Green, 2016). The drivers that were discovered for a city to become smart include environmental pressures, demographic pressures, fragility - vulnerability to natural disasters and/or inability of the city infrastructure's ability to cope with rapid social and economic change. Green (2016) proposes three ways to achieving a smart city: 1) An 'anchor' route, - When a city launches an application then develops new applications to support the initial one. 2) A 'platform' route, whereby a city designs and launches infrastructure first before launching applications that run on the infrastructure. 3) A 'beta city' route, which explores different applications to find which one best meets the environment and situation before selecting one in particular.

The Western Cape Government (WCG) came up with a Digital City Strategy from the Integrated Development Plan whose vision was centred towards creating an enabling environment for economic growth and development, achieving effective and equitable service delivery and to serve the citizens of Cape Town as a well-governed and effectively run administration (Stelzner, 2015). The Digital Opportunities Implementation Framework was created as a guideline for implementation towards a digital economy for the realisation of a provincial Strategic Framework, concerning citizens and businesses elements (Western Cape Government, 2018b).

The city's digital strategy was based on four key pillars:
   I.   Digital Infrastructure
  II.   Digital Government
 III.   Digital Inclusion
 IV.   Digital Economy

2.6.3 Digital Infrastructure

The digital infrastructure pillar aims at developing Cape Town's broadband infrastructure to narrow the digital divide and enhance digital inclusion by increasing access to services over the Internet to promote through training basic computer skills. Cape Town boasts of an intensive broadband infrastructure programme that claimed a big financial investment and has created employment since 2012 (Mhangara et al., 2017). The broadband plan bridges the

digital divide and fosters economic growth particularly in underprivileged communities. Broadband provides a foundation of all the other three pillars through network services, telecommunications infrastructure connecting health facilities, schools and libraries (via SmartCape) and public services using digital tools. Furthermore, Cape Town is rolling out application infrastructure systems in the corporate network, CCTV for ICT based surveillance and security, and data centres and servers for the City's digital applications. The initiatives aim to develop Cape Town to be the most connected city in Africa with the lowest data tariffs. WC Broadband Goal 2020's objective was devised with five streams focusing on; 1) Connectivity, 2) Citizen and Business adoption, 3) Government applications, (mainly ERP), 4) E-learning, E-education as a game-changer and 5) Connected municipalities.

2.6.4   Digital government

E-Government services coupled with digital technologies increase transparency, accountability and service delivery efficiency. The open data portal launched in 2014 along with the Cape Gateway were designed to provide more "self-service" channels that reduce poverty and inequality (Mhangara et al., 2017). Application of open data to modernize the city support services creates a knowledge-base where citizens are engaged in governance (Hamzah et al., 2016). The CoCT's services have been made available on the digital platform and the municipality has been making efforts to harness digital tools to encourage innovation in service delivery. Additionally, Cape Town city hosted a City Innovation Forum that lobbied the national government for rules over service innovations (Stelzner, 2015).

2.6.5   Digital inclusion

 "The Cape Online e-government Programme" was designed to enhance digital services enabling society access to social services and knowledge. The use of ICT and digital technologies allows accurate datasets on socio-economic challenges and conditions (Stelzner, 2015). The public internet access through wi-fi, coupled with skills training in remote areas that do not have enough infrastructure and other initiatives, enable the city to become a caring and responsible city through programmes that promote social transformation initiatives. Digital tools will increase the quality of service delivery and engagement with residents, in turn, improving digital inclusion goals (Abrahams, 2016).

Broadband Initiative (BBI) STREAM II Strategy and Plan is part of the digital opportunities implementation framework that aims to increase competitiveness to businesses and livelihoods of people through broadband. It promotes ongoing dialogue between stakeholders to identify challenges and work together in designing and implementing solutions. Some of its initiatives include Cape Digital Foundation, collaborative projects, ICAN Franchise, social and

digital literacy programs for citizens, E-Skills Platform equipping communities with access to relevant e-skills programmes and the Connected Business Projects (WCG, 2015).

2.6.6 Digital Economy – Supporting the digital economy

The digital economy is focused on creating an enabling environment for the growth of tech-enabled enterprises and maximizing job creation. The smart city initiatives for the digital economy rely on the use of technologies to improve business processes with technology transformation and automation strategies. The digital economy has ties in digital inclusion and skills improvement. Creating a tech-enabled environment facilitates the growth of tech-enabled enterprises and aids in job creation. The Western Cape's drive to enable venture capital has attracted local leading e-commerce websites (such as Takealot, Zando etc.) in South Africa to have their central businesses operations setup in Cape Town. WCG established business support initiatives that promote collaboration between private-public partners sharing ideas for the use and adoption of ICT, Investing in ICT skills for the CoCT and support for small business programmes (Stelzner, 2015).

The application of Intelligent Transport Systems (ITS) is a crucial part of the smart city as well as the SDG to achieving inclusive and sustainable cities (Habitat, 2018). The use of EV technology makes Cape Town's Bus Rapid Transit System (BRT) network project environmentally sustainable. The private sector along with the Industrial Development Corporation (IDC) is working on expanding the Electric Vehicle (EV) charging infrastructure (Deonarain, 2019). In 2017 several MyCiTi busses were equipped with wi-fi providing a free data bundle to commuters (Stelzner, 2015). Smart lighting, smart waste and drone usage by PRASA are among other sustainable and energy-saving IoT initiatives to support connected services. In recent research, Deonarain (2019) recommends SA transport to utilise IoT and customize to a smart multimodal transport network system that support pedestrian and cycling paths around the city to ease congestion, carbon dioxide emissions, and promote sustainable living.

2.6.7 Digital tourism

The Digital Opportunities Implementation (Framework) Plan identifies tourism as one of the main technology focus sectors. The successful utilisation of digital opportunities will impede international digital disruptions. The Digital Economy Regulatory Environment was established to coordinate and manage the regulatory environment, data management and protection through a sandbox pilot model. The model focuses on Exchange Controls and Intellectual Property Tourism sector regulations (Western Cape Government, 2018b).

Several researchers have mentioned "storytelling" a novel approach to IoT in tourism that is based on what objects in an environment would say if they could talk (Mighali et al., 2015; Vives, 2018; Gcaba et al., 2016). Using new and existing technology an object and the environment become active and able to use data it collects from itself and the environment and other objects and created a comprehensive story. Tale of Things and Electronic Memory-TOTEM is an easy way of storing memories and content relating to an object online using web content (text, image, video and audio) (Gcaba et al., 2016).

Several hotels have shown growth in performance and technological innovations, mobile applications and improved visitors' experience (National Department of Tourism, 2019) However, according to Booyens et al. (2016) accommodation establishments have the greatest propensity for environmental innovation. The use of technological advancements has been impeded by the costs that are involved in adopting the technology in smaller accommodation establishments in Cape Town. Well established hotels such as the new-built green hotel "Hotel Verde" have been designed to embrace environmental innovations. The hotel has a greywater recycling system, renewable energy and a recycling initiative (Booyens et al., 2016). Manda and Backhouse (2019) suggest several IoT initiatives that can be implemented in Cape Town tourism that include the development of tourism applications. Among the WCG tourism initiatives is the Khulisa Project, a smart city initiative to foster the growth in the tourism sector by developing cultural tourism, focusing on special tourism markets and business growth (Pillay Kavitha, 2017).

To curb the increased occurrence of attacks on hikers and tourists on Table Mountain the South African Police Services (SAPS) along with the CoCT, and South African National Parks, are exploring the possibility of the use of drones in surveillance, to increase security (Deonarain, 2019).

2.6.8 Cape Town as a smart city / destination - Overview:

Several researchers have echoed the importance of marketing and experiential services in tourism and the use of digital technologies (Buonincontri & Marasco, 2017; Liberato et al., 2018; Gretzel et al., 2015c; Lou et al., 2017). According to Green (2016), smart city assessment, Cape Town's smart city score was mainly raised by the high priority in improving ICT skills. Similarly to Gcaba et al. (2016), Green's (2016)(Green, 2016) research notes the need for the application of robust IoT in smart city initiatives in Cape Town tourism.

There is a lack of smart technologies implemented in heritage and cultural attractions in Cape Town. Issues that have been raised on tourist attraction centres include security, long queues,

delays, annual shut down, power cuts, safety rescue plans, adverse weather and lack of information on these to tourists (Pile, 2017; Andres, 2019). Most negative reviews for Robben Island have raised concerns of inarticulate guides and information loss from young, inexperienced guides (Pile, 2017).

Launch Lab, FSAT lab and Tink Lab are technology hubs and incubators actively involved in new technological innovations in service delivery in Cape Town. Tink Labs Limited launched "handy" in the South African market , an innovative hospitality IoT tool crafted to raise ancillary revenue, tourist satisfaction and manage the financial efficiencies for hoteliers (Fredericks, 2017).

Although there are challenges, there is potential in developing travel systems that incorporate planning what is now being termed "Proactive Tourism Systems". These systems use big data to pick up, analyse and make sense and predict tourists' behaviours (Lim et al., 2017). The drive for digital innovation is trailed by high capital outlay, regulatory challenges and loss of tax for the government. The Department of Tourism along with the government departments are encouraged to work, plan and prepare to minimize the unfair playing field created in the tourism value chains by formulating policies that govern practices, whilst promoting sustainability by setting precautionary predictive measures ahead of technological trends (Gomes et al., 2017). Other concerns raised in researching on smart cities in China include a lack of data and inapplicability of indicators that have been applied in other countries in the world (Femenia-Serra et al., 2019a).

A prominent hindrance to attracting the Chinese tourist market in literature is the "love and hate" test that has been subjected to Chinese tourists in many destinations and new markets. This has been attributed to differences in cultural background, language and recently the Covid-19 pandemic (Goh & Wen, 2020). Although most researchers have acknowledged the rapid growth of Chinese tourism, several different opinions have been raised about their future trends. Hong Kong and Macau were hit by an Asian severe acute respiratory syndrome (SARS) outbreak in 2003 that greatly affected the tourism business. Other significant issues raised by the Chinese for not visiting South Africa include security, among others (Smith-Höhn et al., 2016). As it has been reiterated in this research the Chinese have been highly "irrational", and the Chinese outbound tourism is geared towards shopping rather than cultural activities.

Whilst the WCG has invested heavily since the beginning of the broadband project. In digitalisation Gomes et al. (2017) affirm that investing in technology is not enough, likewise the WCG (2018) acknowledges the need to accelerate the pace of its broadband strategic

framework to keep up with changes in the digital space. Manda & Backhouse (2019:197) have cited the project as lacking leadership and financial constraints at a national level and failing to achieve its 2020 target of providing connectivity to all. Institutional weaknesses have weakened the implementation of policies and multiplicity of available solutions have made it difficult for municipalities to evaluate developments (Manda et al., 2019).

2.6.9 Summary of the literature study

The various sections of the literature review envisaged rapport exhibitions on Cape Town tourism, Chinese tourism, smart cities (destinations) and Cape Town's smart city initiatives. The literature review identified the Chinese tourist market as a growing tourist source market with substantially unexploited potential revenue. Several niche markets were identified within the Chinese tourist market. The emerging niche markets within the Chinese tourism are highly tech-savvy, explorative and adventurous in nature. The Chinese tourists mostly visit Asian destinations, America and Australia, these destinations are making effort to adapt their services to suite Chines preferences. Although the Chinese tourists perceive long haul destinations as prestigious, the existing literature does not identify Cape Town or any particular African destination as a special preferred destination. A progressive analysis of smart city frameworks ushered the application of the (Sa)6 to smart destinations. The ANT theoretical framework guided the literature in comprehending and synthesising the tenants of smart destination design. In analysing Cape Town as a smart city, Cape Town's Digital strategy identified tourism as a critical sector in the application of ICT strategies, there is a lack of practical contributions and implementation of smart destination development. The Smart Africa Manifesto provides a guide in policy making for African countries in following the UN's Digital Agenda for socio-economic development. Considering the broad optics identified in the systematic literature review, there is a need for a pragmatic inquiry of data to collate the identified assertions. The following section outlines the research plan and design of the data collection.

CHAPTER THREE: RESEARCH PLAN AND DESIGN

3.1   Introduction

This chapter provides a fundamental guide towards answering the enumerated research questions through a systematic order of gathering data. The next section introduced the socio-technical research (3.2) approach. The following section describes the research paradigm (3.3), and the next section (3.4) explores the research methodology. The fifth section is the research methodology (3.5), which entails how data was be collected. The sixth section is the sampling method (3.6), and the last section outlined the ethics (3.7) that guided the research, and the summary (3.8) concludes this chapter.

3.2   Socio-technical research

According to Davis et al. (2014) there are various stages in analysing an existing socio-technical system. In some research the stages illustrate how the framework has been used in crowd events and assess sustainability in the work environment. Geels (2004) identifies meta-coordination as the relationship between social groups and sub-functions of socio-technical systems. The writer further proposes the concept of niches for radical innovations embedded in the multilevel framework which can be used to measure and assess technological transitions or innovations. Innovations that address modern challenges provide sustainable solutions that are considerate of human social issues in the design (Davis et al., 2014). A deeper analysis of innovation dynamics stresses on the importance of networks, and interactions with actors in the multilevel approach (Markard & Truffer, 2008). In the Actor-Network people and technology are regarded as equal and connected actors in a complex, smart digital tourism ecosystem (Boes et al., 2016a).

3.3   Research paradigm

The epistemologies of qualitative research in Information Systems may be interpretive, positivist or critical (Goldkuhl, 2012). Positivism has been generally applied to quantitative research, whilst interpretivism has been popular in qualitative research and the critical research paradigm has been noted as a variant of interpretivism.

Pragmatism provides an understanding of the research problem using qualitative methods as it is not dedicated to one philosophy (Creswell, 2013). Johnson and Onwuegbuzie (1990:4) support pragmatism as a philosophy that reduces the gap in conflicting philosophies and highlight the shortcomings that should be considered when carrying out research. They further point out that situations are always changing, and organisms adapt to the changes in an infinite

loop. Among the different preferences, the consumption behaviour patterns show that research should constantly try to improve current understanding based on past research in a way that is suitable to the operational world (Johnson et al., 1990).

3.4   Research methodology

The Research methodology is the procedures and principles that guide research, throughout every stage (Marczyk et al., 2005). The essential components of a methodology include measurement, validity and credibility. Validity is most related to the methodology as it seeks to construct more verity. The characteristics of the participants and the setting are to be considered when selecting the methodology. These include the level of literacy, language spoken, age group and the type of data that needs to be collected (Morse & Field, 1985).

Lincoln and Denzin (2005) support that qualitative research provides an essential view that enables researchers to comprehend phenomena differently from a positivist perspective. The advancement of theoretical ideas in qualitative studies is often applied to decide on the relationship of different phenomena (Modell, 2005). According to Mouton (1996), the research strategy is usually contextual. In addition to the research questions' exploration, the research attempts to explain how the IoT in tourism services can enhance service delivery, particularly to the Chinese tourist market. If the research had access to the Chinese market a quantitative and qualitative study would have been more appropriate as the population would have a wide range of characteristics in terms of demographics, knowledge and language barrier. However, collecting data from professionals and officials from a narrow variable of stakeholder groups calls for a deeper method of inquiry, hence a qualitative method would be more suitable. According to Riley and Love (2000), multifactor designs use qualitative ways to contextualize and expound situations specific to certain cases. Due to the general lack of secondary data, this exploratory research seeks to attain primary data guided by the common smarty city pillars.

3.5   Research methods

Open-ended questionnaires were carried out through face-to-face interviews for the qualitative data collection of the research, using semi-structured interview questions prepared to form a standard set of questions. Unstructured interviews are used when the researcher has little knowledge on the subject of the interview, making the interview a good source of learning (Morse et al., 1985). Whilst semi-structured interviews are applied when the researcher has some knowledge on the subject and has a set of questions to ask but is not certain of the responses. An open-ended and semi-structured interview combines the benefits of both unstructured interviews and structured interviews (Opdenakker, 2006). The data from interviews was applied as qualitatively weighted and triangulated with the literature review

findings. The open-ended questions gave the respondents the option to add their opinions, personal knowledge, and insights. Qualitative research offers the researcher extensive rich descriptive data, gathered from participant observation, document analysis and in-depth interviews (Mouton, 1996).

3.5.1   Expert interviews

Face-to-face interviews are interactive and allow synchronous communication, exchange of social cues, follow up and clarification (Opdenakker, 2006; Audenhove, 2007). Focus group interviews of individuals or groups composed of 7 to 10 participants are selected because of their expertise on a particular subject (Morse et al., 1985).

The first phase of interviews was conducted with the CoCT senior government officials, comprising of two interviews. The first interview was with a senior official in WCG, a stakeholder involved in the planning and implementation of the digital transformation initiative. The second interview was with a panel of several officials in the Cape Town City in DEDAT department responsible for planning and implementation of city plans. Both of these interviews were carried out face-to-face at the officials' respective offices.

The second phase of interviews was conducted with Cape Town Tourism officials, tour guides and hospitality operators. These significant stakeholders offered a self-understanding of structures and subjects, Mouton (1996:169) defines this as an "insider perspective". These interviews were carried out over Zoom meetings as most individuals were on lockdown or working from home due to the 2020 Covid-19 induced lockdown. All interviews were 30-45 minutes long and took place at participants' homes or place of work. The interviewer conducted all interviews with the expert guidance of the interviewer's senior supervisor. The interviews were recorded into digital audio format and transcribed for analysis. Recording and note-taking were done to ensure all issues were addressed and to be prepared in case of a recording malfunction. With technology face-to-face interviews can be carried out over the internet cutting costs associated with travelling (Opdenakker, 2006).

Expert interviewers are highly reliant on interviewer skills and the context of the interview must be taken into consideration (Chemaly, 2012), A well-designed questionnaire facilitates for the extraction of rich and detailed data. The interview questionnaire was emailed to the participants before the interview to assist them in preparing for the interview and to avoid long deliberations or missing some points. Expert interviews require expert analysis which can be delivered by a good interviewer asking well-formulated questions (Mathers et al., 2007). Simple follow up questions are useful to avoid bias, provide reliable information and keep respondent neutral

(Morse et al., 1985; Audenhove, 2007). To lower the chances of bias the researcher consulted and co-interviewed all the interviews with a senior, experienced supervisor. Moreover, after every interview, the two reflected on revolving themes, outlier comments and opinions raised during the interview.

3.6   Sampling method

To obtain the best quality research data a systematic procedure of selecting participants demands to be followed (Saldaña & Omasta, 2018). The selecting of participants might evolve in the process as the researcher seeks to get new perspectives or assertations (Mathers et al., 2007).

The first step to defining a sample is identifying a target population and successively identifying the sampling frame. The target population must associate with the scope of the generalization of the intended study and the empirical prerequisite of drawing the sample. In operation with the target population, the sampling frame provides a subgroup of all the possible samples (Mouton, 1996).

In this research, the participants were selected from the CoCT, and tourism and the hospitality sectors. This selection of sectors provided a relevant and reasonable theoretic distribution from the smart destination spectrum, thus defining the target population. From the array of smart destinations stakeholders, the key sectors that drive the initiatives of designing a smart destination are the government and the tourism sector. Likewise, the research identified these two key data sources forming the sampling frame of the research.

Random sampling offers every participant in the population an equal probability of being selected (Mathers et al., 2007). Random sampling is applicable where there is a large number of participants with uniform characteristics and where data being searched is not highly dependent on knowledge or experience (Clark & Creswell, 2015). A convenience sample is the least intensive sampling technique that selects the easiest accessible respondents saving time and money but has poor quality and credibility. Judgement sample or purposeful sample is the selection of respondents that give the most accurate and richest data due to high knowledge or intellect. Other variations of purposeful sampling include key informant sample and snowball sampling. Key informant participants have special expertise and knowledge whilst snowball sampling respondents emerge from referrals and recommendations (Dawson, 2002:53). The theoretical sample is based on the theories that emerge as the researcher collects data. It stems from grounded theory although it can be applied in qualitative studies (Marshall, 1996).

The first phase of data collection applied to a purposeful sampling technique, collecting data through key informant interviews to obtain rich information from people in strategic positions from the CoCT. A sample of four respondents in positions of leadership and responsible for city planning were selected and interviewed. The researcher managed to schedule these two interviews and the respondents provided comprehensive data to the interview questions.

The second phase of interviews identified the tourism sector to be comprised of various individuals and groups of stakeholders. A purposeful, stratified random sampling from tourism stakeholders such as accommodation, restaurants, tour operators and the Department of Tourism was applied. The efforts to confirm and secure interviews were initially difficult. This churned the sampling method of two respondents into snowball sampling as the researchers were referred through a chain of referrals to get the most information. One informant was referred to as "a treasure of information" whilst snowballing.

According to Morse et al. (1985), adequacy and appropriateness are the two principles that steer qualitative sampling. Appropriateness emanates from searching for participants who can provide the most effective and informative data. Thus, simple random sampling may not be the best option as it may provide less knowledgeable participants. Contrastingly, a theoretic sampling invites candidate according to the theoretical needs of the research. Adequacy is the principle that sufficient data has to be collected to construct a rich comprehension of the phenomenon. Several writers describe this stage as the point of saturation (Malterud et al., 2016; Onwuegbuzie et al., 2006). At this point no new data could be derived by instructing further interviews. Qualitative researchers discovered that some participants are 'richer' in data and that these participants are more likely to offer deeper insight and understanding for the researcher than others. The exact number of a sample size arrives as the data collection progresses an adequate answer to the research question is achieved (Marshall, 1996). This is indicated by the non-existence of new themes and categories. A sample size should be appraised continuously, to ascertain whether the sample size has reached an adequate size for analysis (Malterud et al., 2016). Respondents are selected in favour of their level of knowledge on a subject and theoretical needs of the study, and is a process called theoretical sampling (Morse et al., 1985). During phase two, new themes stopped emerging after five interviews and an acceptable interpretative framework was constructed after seven interviews. This was the stage of thematic saturation.

3.6.1 Data sources

The qualitative data was collected through semi-structured questionnaires that follow a designed pattern of standardised questions. Questionnaires and surveys are comparatively

easy and inexpensive even when gathering data from a large number of people who are spread over a wide geographical area to explore a specific subject and collect information about opinions, demographics and attitudes (Bird, 2009). Other sources of qualitative data could be texts, documents, and the researcher's reactions and impressions (Myers, 2009). Observations do not rely on peoples' willingness to provide information, however, in the context of this research observation did not apply as the research was not confined to one small geographic area. Qualitative data was gathered from semi-structured interviews with the defined population.

3.7   Ethics

Ethics in research relates to undertaking research whilst complying with certain morals and codes of conduct. The unethical practices and violation of human participants in history have spurred the promulgation of ethical Charters, Declarations and Ethics Review Boards to guide how to conduct research that involves human beings (Kruger et al., 2014). CPUT Education and Social Sciences (2011)(CPUT Education and Social Sciences, 2011) provides ethics guidelines and general principles that researchers should follow in conducting research. As recommended, this research obtained a formal ethics approval to conduct research from the Faculty of Informatics and Design Research Ethics Committee at the Cape Peninsula University of Technology (Appendix O). All interviews were carried out and scheduled at the convenience of the participants, and the following ethics codes were communicated and upheld:

- **Informed consent** – research should identify the critical people to obtain consent from before carrying out research. The consent should be informed through a comprehensive outline regarding any possible hazard, the right to participate or withdraw, right to turn on / off recording at participant's request.

- **Anonymity** – avoiding identifying participants by mentioning of names of participants or any other form of personal information.

- **Respect for Persons** – the researcher has the mandate to respect participants as human beings by honouring their rights to make decisions and upholding their safety throughout the research (Marczyk et al., 2005).

- **Honesty** – the participants have the right to know anything about the research, particularly any information that would influence their decision in participating.

- **Confidentiality** - respecting participants' privacy by avoiding questions that may be offensive or asking for data that is not relevant.

3.8   Summary

This section detailed the research methodology, design and methods in depth. The research applied a socio-technical research methodology and further applied qualitative techniques in data gathering. Several potential participants did not respond to email requests to participate in the data collection. Expert interviews were carried out to the point of data saturation for both phase one and phase two of the data collection. The participants of the second phase of interviews were particularly deterred by the Covid-19 pandemic as respondents were on lockdown or working from home. However, the interviews were carried out online via Zoom cloud meetings and Microsoft teams. A few interviews were cancelled as respondents felt that they were not well informed to participate, some however referred the researcher to more competent participants. The following chapter discusses in-depth research findings, analysis, and results.

CHAPTER FOUR: RESEARCH FINDINGS

4.1 Introduction

Chapter four presents the results of the research and provide a brief synthesis of the data in line with the research aim. The data is conferred apprehensively as an exposition of the research findings in preparation of the data analysis. The "findings" are presented as unadulterated results before they were synthesised as demonstrated in the Appendices A-N. The data was to few to use a computer program and hence tabulation was for demonstration of how themes and categories were derived. This approach reduces bias errors and omissions see (Yang et al., 2018). Chapter five goes further in illustrating how data from transcription is coded. Raw data is cleaned before coding being wary of inflection and filler words see (Stuckey, 2014).

This research aimed to address the following main research questions, which were derived from the research aim:

I. What smart city initiatives exist in Cape Town?

II. How can Cape Town improve its focus on Chinese tourists using smart technology?

The interviews were carried out in two phases:

1. Phase one involved in-depth interviews with strategic ICT officials of the CoCT and the Western Cape Government.

2. Phase two involved tourism stakeholders that are involved with Chinese tourists.

The interview questions were constructed across several sections to capture parallel definitions of smart city, smart destination, smart experience, smart tourists and smart inhabitants, and digital communication infrastructure. The scripts were analysed for codes - words, phrases and terms, which were coded to identify categories of data. Repeated data from the correspondence were distilled and grouped into key themes and categories. The table 4.1 below outlines the two phases and different aspects that they sought to address.

Table 4.1: Overview of fieldwork

Phase	What was done	How it was done	Why it was done	When it was done	Where it was done	With whom it was done	What was achieved
1	In-depth expert interviews.	In-depth interviews with city/ government stakeholders.	To discover their focus and aims in the provision of digital connectivity. As the foundation of a smart	August 2019	CoCT Offices.	CoCT Officials and PGWC Director.	A better understanding of the digitalisation progress in terms of IT infrastructure in Cape Town, SA.

| 2 | In-depth interviews. | In-depth interviews with tourism and hospitality stakeholders. | To get an insight into the tourism experience of the Chinese tourists. | June-July 2020 | Online video and audio interviews. | Tour operator, Tour guide, Hotel owner Destination Marketing Organisations (Cape Town Tourism). | A better understanding of the importance and potential of Chinese tourists. Evaluation of the level of Smartness of Cape Town as a destination from the view of Chinese tourists and insights into the Chinese market's technology needs. |

4.2   Findings of phase one

After the interviews were carried out, the audio recordings were transcribed, and data captured electronically. The transcribed data were analysed using thematic analysis. Thematic analysis is the review of data by examining aspects such as correlation and frequency to produce meaning (Saldaña et al., 2018:220). According to Elo and Kyngäs (2008), the researcher should gather data until a point of saturation is reached when collecting quantitative data. Other significant findings were drawn from non-repeated profound comments. These were marked as outline findings.

The following questions and sub-questions were formulated based on the Smart Africa Manifesto:

1. **How is the CoCT positioning ICT at the centre of its socio-economic development agenda?**
     a. How is it integrating ICT in its development agendas to reduce poverty, create prosperity and increase productivity?
     b. How is it facilitating innovation and the creation of content and applications that are context-appropriate, development-oriented and scalable to deliver social and economic benefits in Education, Healthcare, Business, Agriculture and other key sectors?
     c. How is it developing the capacity of its people to utilize ICTs and be fully empowered participants of the ICT-driven economy and society?

2. **How is the CoCT improving access to ICT especially broadband?**
   a. How is it improving connectivity especially in underserved areas to ensure quality and affordable access for all?
   b. At a policy level, how is it advancing and harmonizing its policy environments to ensure they are enablers, rather than constraints to universal access?

3. **How does the CoCT improve accountability, efficiency and openness through ICT?**
   a. How does it integrate ICT in service delivery and develop and encourage the usage of government-to-citizens, government-to-business and government-to-government services online to improve efficiency?
   b. How does it use ICTs to drive accountability, transparency and improve decision making while respecting country-specific confidentiality, privacy and national security considerations?

4. **How does the CoCT put the private sector first?**
   a. How does it foster an enabling environment for private investments to drive job creation, productivity and competitiveness supported by technology and innovation?
   b. How does it promote the use of ICT to increase access to markets and information for business?
   c. What is its view on establishing local innovation hubs with the requisite business development, financial and technological capabilities?

5. **How does the CoCT leverage ICT to promote sustainable development?**
   a. How does it use ICTs to empower women?
   b. How does it use ICTs to empower youth?
   c. How does it use ICTs to create social inclusion for particularly people with disabilities?
   d. How does it use ICTs to address climate change, clean energy, e-waste, urbanisation, disaster management and other risks in our environment?
   e. How does it use ICTs to embrace innovations in the fields of cybersecurity, cloud computing, mobility, shared infrastructure and shared services?

Four officials from the CoCT officials and the Western Cape Government were invited to participate in in-depth interviews. The following responses were obtained from the in-depth interviews and consequently, corresponding summarised key themes and categories.

Table 4.2 - Responses to how the City of Cape is positioning ICT at the centre of its socio-economic development agenda:

Comment	
Respondent 1 (R1)	The City has been supporting the growth and development of the ICT sector in Cape Town with the view of impacting poverty alleviation as well as creating prosperity and productivity through the provision of an enabling environment for the ICT sector to thrive in Cape Town. This intervention in the form of provision of an enabling environment has led to start-ups/SMEs/Entrepreneurs/venture capitalist/incubation platforms/finance and services related companies setting up and operating from Cape Town.
R2	The Cape Access initiative offers computers and internet access at e-Centres located in communities with limited access to ICT. The CoCT continues to invest in IT infrastructure, and by 2019 the city has installed 848km of fibre-optic cable and over the next 2 years, the city will devote R1.98 billion on fibre infrastructure.
R3	Through research and benchmarking, the Western Cape Government discovered that a positive relationship exists between GDP growth and internet adoption and therefore designed a Digital Opportunities Implementation Framework based on the Broadband Strategic Framework. This aims to curb the key challenges facing the Western Cape region, such as a growing informal sector and rising youth unemployment, exacerbated by the prolonged downturn in the South African economy.
R4	The Digital Skills Development initiative is driven via the Digital Marketing Implementation policy with the main focus on job creation and economic development. Through job creation and promoting skills development, it seeks to stimulate innovation and growth. In so doing, it seeks to increase access to new opportunities and markets, while making the environment more competitive by driving productivity.

Table 4.3 -: Responses to the CoCT's efforts to improving access to ICT, especially broadband:

Comment	
R1	The CoCT has been enabling the environment through the provision of over 848km of broadband infrastructure in Cape Town that will be helping to reduce the costs of telecommunication in the near future.
R2	The SmartCape initiative is designed to help residents access the internet, free of charge at 105 community libraries. In conjunction with a private company, Liquid Telecom SA, the Western Cape Government will expand the number of free Wi-Fi hotspots at government buildings from 178 to 1 600 in 2019. This is a R3 billion project to deliver broadband connectivity to government offices, libraries, schools and clinics.
R3	With its provincial Broadband Strategic Framework, the Western Cape is able to improve telecommunications and technological infrastructure across the provincial and local government spaces (via the Connected Government strategy)
R4	The Department of Economic Development and Tourism (DEDAT) is pushing for a more regional approach on the skills side, with strategies that drive the economy on a regional basis via local economic development strategies. Additionally, there is a need to learn and understand the demand, challenges and blockages facing job creation to create more opportunities.

Table 4.4 - Responses to the CoCT's efforts to improve accountability, efficiency and openness through ICT:

Comment	
R1	The CoCT supports the ICT sector through financial and non-financial support of the ICT ecosystem – the CoCT supports the ICT sector through annual funding and non-funding collaboration with the various clusters in the ecosystem – including support to sector bodies like the Cape Innovation Technology Initiative (CITI). The CoCT has been providing broadband connectivity to city buildings, public buildings and will eventually be providing fibre connectivity to the private sector in order to reduce costs of telecommunication.
R2	Through the Digital Government Strategy (DGS), all provincial ICT initiatives should optimise and transform existing public services and create new public services for citizens through digital empowerment of residents and employees. In turn, the Digital Transformation Plan will be launched in 2019 via workshops and consultations with other departments, citizens, academia, businesses as well as local and national government. One example is the e-Learning initiative where an e-portal features educational videos, apps, eBooks, courses, etc. Another project known as eHealth uses ICT to improve and facilitate public healthcare by enabling better planning, implementation and the monitoring of service delivery to patients.
R3	The broadband roll-out started in DEDAT out of the need for solutions to the financial crisis a number of years ago. The strategy was to address the financial crisis through ICT and in so doing DEDAT created a plan to invest in infrastructure. This resulted in the establishment of a network to remote areas with fibre capacity for public Wi-Fi access.
R4	DEDAT's main focus is on the citizen and business digital adoption, prioritising their access to broadband infrastructure, information and opportunities thus broadening their participation in the economy (via the Connected Citizen strategy).

Table 4.5 - Responses to the CoCT efforts to put the private sector first:

Comment	
R1	The CoCT collaborates with Province, CITI and the private sector stakeholders in regard to supporting skills development in the ICT sector that enables companies to source appropriately skilled young people. The CoCT has been collaborating with the private sector through the above-outlined initiatives with key stakeholders like Province, CITI, Wesgro and the private sector. The support of the ICT sector ultimately results in job creation, productivity and competitiveness through skills training, enterprise development and incubation, marketing as well as the support of industry events.
R2	There is a focus on red-tape reduction and becoming a business-friendly city. Private sector development is supported through agencies like Wesgro which is part of the tourism department and has invested more than a billion over 10 years.
R3	Broadband diffusion focuses on Connected Leadership, Connected Citizens and Connected Business aiming to harness leadership and vision across all sectors of society.
R4	The WCG accepts that the internet provides citizens and businesses with access to options and possibilities through information, services, resources, and opportunities. It strives to increase access to new opportunities and markets, by generating novel service-oriented businesses in the local, national and international space.

Table 4.6 - Responses to the CoCT's efforts to leverage ICT to promote sustainable development:

Comment	
R1	The CoCT has also been supporting enterprise development programs that target small businesses in the ICT ecosystem including the women in business programs (these programs target women in business with the aim of helping them to grow their businesses – this involves hands-on facilitated workshops, Inspirational and practical discussions, networking opportunities, small group mentoring, introduction to business and digital tools). The CoCT also helps in collaboration with key stakeholders like Wesgro and CITI to market Cape Town as a competitive destination and ICT hub for the ICT sector in Africa.
R2	The Western Cape Broadband Initiative proposes that by 2030, every citizen will have access to affordable high-speed broadband infrastructure and services. Along with this, they will have the necessary skills to be able to effectively utilise this infrastructure and is actively using broadband in their day to day lives. The Cape Access project provides less privileged and rural communities access to computers, cell phones and the internet, as well as the various services and applications associated with them.
R3	The WCG has recognised broadband as key to the future growth of the Western Cape. The Provincial Strategic Plan states categorically that the provincial government has committed to encouraging the growth and development of the provincial economy through the support of broadband usage.
R4	Main programs include the Cape IT Initiative, Wesgro, IP regulation - Coordination and Management in the Regulatory environment, and the development of models for government (as appropriate).

4.3   Findings of phase two

The findings of phase one provided a wholistic and strategic blueprint of a smart city at a city planning level. To fully address the aim of the research, further research interviews were carried out with the tourism stakeholders to gather data addressing research questions pertaining to tourism and Chinese tourists. The following table shows a demographic background of the tourism stakeholders that were interviewed.

Table 4.7 - Demographic brief of respondents of phase two:

	Brief background
R1	Enterprise and Investment City of Cape Town – Place Marketing Unit (Head of Destination Development).
R2	Executive Chair of WTF Chinese market
R3	A senior Management role - Cape Town Tourism
R4	Experienced tour guide in Chinese tours in Cape Town
R5	Tour Operator
R6	South Africa Tourism - Hub Head Asia (Former Head of Economic Development - WCG)
R7	Entrepreneur in the travel agency business, in corporate and leisure travel, as well as restaurants and accommodation establishments that range from holiday apartments to business hotels and leisure resorts.

The following questions and sub-questions were formulated for phase two based on the (Sa)6 and factors affecting the tourism experience:

1. Do you believe that attracting Chinese tourists present a unique challenge, over tourists from other countries?
    i. Can you please elaborate?
2. How do you propose that Cape Town could do better at attracting Chinese tourists?
3. Do you believe that technology has a role to play in attracting Chinese tourists?
4. If so, how could technology assist with aspects such as:
    i. Attractions
    ii. Accommodation
    iii. Transportation
    iv. Support services in the tourism industry
5. Are there any other comments that you would like to make, that would assist the aim of this study?

The following tables show the responses obtained from the respondents of phase two interviews.

Table 4.8 - Responses and elaboration to whether attracting Chinese tourists present a unique challenge, over tourists from other countries:

Comment	
R1	Yes, Bigger touring companies – like Thomsons they come in big groups/organized – this influences the type of accommodation. Have to have SA guide (legislation) otherwise SA guides lose out. Language is a barrier. Younger more exposed to English but not elderly.
R2	Very lucrative market but has barriers. Language is a barrier. Distance from China to SA and WC is a long-haul destination market but WC is a unique destination. There is a stigma towards Chinese, challenge to accept Chinese, can be done through community readiness. CT is not cheap but good value as it attracts the high end of the market. Select a few of tourists. They are a good market but not the key market.
R3	Yes, Language barrier which remains a challenge. Need new ways of promoting SA and Cape Town, are still perceived as an exotic destination. Barriers to entry – flights and relevant product that can assist in our Chinese tourists to feel welcome. The way that business is structured – there are certain rules and regulations that are required for tourism businesses in South Africa that are costly, that prevents additional promotion or information from being shared. Safety and Security issues- not only financial but personal safety, data protection. Flexibility in targeting a new segment from the Chinese visitor. We have been targeting the same profile of customer year after year. We have to target on the relevant platforms such as Alibaba, WeChat etc to engage the Chinese audience. Lack of engagement targeting the corporate and incentive market. That should be a focus to bring the decision-makers and influencers here to ensure that marketing is extended.
R4	Yes, Geographic distance is a barrier. The distance between Cape Town and China it's about 10000km. There is no direct flight with between Beijing and Cape Town. The flights connect and arrival times are often odd. They have hard-earned money only accumulated at an old age but the old cannot travel long distances. There are safety concerns arising from social media. Businesses are having difficulties at the present time due to Covid-19 Health and safety concerns.

R5	Language barrier – little English. Frustrating/tedious process dealing with Chinese tourists. Even the younger people don't really speak as much English, so you'll find young people come in as a group, very often out of all of them maybe four or five of them only one person speaks English, and the others don't at all. Distance from China makes it a long-haul destination very far, about 20-hour journey. Another challenge we have come to realize is that South Africa is a high-value destination for China. We are not cheap compared to the rest of Asia. We are, however, still good value. Big, organized groups. Very few tour guides speak Chinese so they will come in big, organized groups, though it's not everyone who is going to prefer these big tour groups especially post Covid-19. For the Chinese market, how are we going to bridge the gap to actually get a Chinese speaking guide for about two people that we need to serve? Okay, one thing I can tell you about Chinese people even though they seem to have lots of money to spend, they are extremely price conscious.
R6	Yes, in fact, an overwhelming Yes. If you have been in a place like China or Beijing or Shanghai, but for example, it's entirely paperless society, there's no money in your wallet, everything is digital, and it's done over a mobile phone. You know when I try, even if I want to buy a little chocolate costing 50 cents. Everything is conveniently electronic, that it's impossible for me to compare yourself to a Chinese. So, while you go to the shop or you get to the hotel or you have like to take out your ID do all these things over there, it's done conveniently on a mobile device. A Chinese can't go without a mobile phone the same way that you would. So, right at the beginning, from acquiring a visitor in tourism to searching online. Following the tourism continuum. It starts with people, dreaming about a destination. Then, the next step is, they do the research, and then they do the purchase, that entire process is digital. They must be able to have digital, rich information at their disposal in their language of choice, on their platforms to make the experience seamless. So that's before they even visit the destination. So yes, I think it's a unique challenge. For example, you don't find contactless payments, as you would in China in destination, like American source market, or the UK, they still very much fall behind when it comes to that. So, there is a lot of aspects there in terms of the experience, the digital experience, that requires for destinations like South Africa to be China-ready.
R7	Yes, I must just say that I'm not super experienced in the Chinese market. I know a little bit about it. I think the obvious aspects in attracting Chinese tourists would be around language to start up with. I think the biggest obstacle, has been, and this is not unique to China but it's some believe it's played a role is now our visa system this applies even to America. Additional requirements and all the documentation with regards to travelling with children. An important aspect is flights, we do not have direct flights for the international markets. More accessible flights and possibly even affordable, or relatively affordable. The perception of Cape Town, South Africa from a safety and security point of view from everything they read about or to TV kind of thing with experience their mindset.

Table 4.9 - Responses to how Cape Town could do better at attracting Chinese tourists:

Comment	
R1	Mostly via Airports (improve communication – dedicated notifications - customised/dedicated) arrival for the Chinese market and Passenger liners.
R2	China has a closed economy to a large degree. We transfer/UnionPay don't support Visa and Mastercard. Financial platforms. Travel in groups due to language and safety and security. South African tours are not geared for that (individual). Circulation of money is locked into Chinese tour operators, restaurants, Chinese tours. That is a real obstacle. Australians learnt that and listened and has students learning Mandarin. The youth market is a great potential as they have "social clubs" that plan and assign tasks themselves in an organized fashion. WeChat Saving conscious nation. They travel to Europe primarily for prestige, status. We don't have luxury apparel. Then wildlife, other iconic attractions. They travel to Europe to iconic shops just to buy originals, they want to buy experience and prestigious.
R3	By addressing the language barrier if possible. An intensive marketing strategy to niche markets in China such as youth and middle-income earners.
R4	*How many Chinese do you think are in Johannesburg?* There are about 2 million Chinese in Johannesburg and maybe 1.8 million in Cape Town. *Can they be used to influence more Chinese tourists visiting Cape Town?* They can be used to market South Africa and Cape Town. In the year 2005 Chinese they had little knowledge of South Africa. But China has been hosting the tourism expos. In the year 2017, it was in Shanghai and Hong Kong. In the following year in 2018, It was a Guang Zhou and another one. In the tourism expo, about 73 countries attend. The local South African Chinese, South African government also attend. This offers a platform for Chinese to ask specific questions and get instant responses.

	But the downside is the negative publicity they have a very powerful media, mainly WeChat with no advertisement and untagged data, unlike if you go to Facebook, you see many advertisements and things to related to you. Get up. It is also popular and safe because it's protected by the Chinese government. *Is there chat function like marketplace on Facebook on WeChat?* They have Wefriends, they agree, and you can put you can post whatever you have there. For example, if I'm selling something, I can share with all my friends and it will be spread to their friends. The way it spreads overnight is much faster than Facebook. *Do you use WeChat to communicate with Chinese from South Africa?* Yes.
R5	Seem to have lots of money yet they are price-conscious – bargain culture- look at better costing models to attract. Outdoor-based packages, shark cage, paragliding. They do their research beforehand. Arrange their own itineraries upfront especially for young and they know what to do when they arrive. It becomes difficult when they arrive to communicate when they have their own little itinerary, they love safaris (especially older client).
R6	South Africa Tourism last year negotiated with WeChat to have a number of initiatives, one of which is WeChat pay so the Chinese people can use the WeChat pay in South Africa for cross border payments. We also wanted them to have that same experience that they have on the WeChat mini programs. This is a super app than WhatsApp, WhatsApp is just like 10% of what WeChat is. You can open it will give you any information about a geolocation destination. You can point it anyway and it gives you information about a place if an attraction. A significant part of that is to have the digital experience for them. So one of the things that the (Cape Town) city has been doing and cities in South Africa have been doing to work towards that is the fibre optic project is the layout fibre to make it more digital. For example, the few free data given by hotels will only last a few seconds for Chinese tourists. Yes. So, even though I've been working in the CoCT, originally from Cape Town. I like to speak on behalf of South Africa and all South African cities, including Cape Town, and it's no different. I think the first thing that Cape Town and the rest of the citizens of Africa have to do is become China-ready and understand what it is to be China-ready.
R7	Having a much easier visa system or as they may be no visas for visiting other countries, direct flights. Some sort of marketing South African tourism to promote SA in China. I do not know how to overcome this, but it becomes the sort of a barrier; the people's perceptions around the safety and security as what they see on TV is a distorted view of reality, it's sometimes taken out of context. As far as crime and safety security is concerned, it is obviously a national problem in Cape Town. If this hurdle or barrier was lifted it would open the floodgates in SA to turn Africa because I do think it's when you think it's about your own feelings about a particular destination. Just to reiterate, accessible, direct flights are critical to increasing the numbers. There's an initiative in Cape Town to try and bring direct flights into Cape Town. Normally Chines are very influenced by lower price than five-star hotels. In low season large hotels are able to bargain with Chinese low yielding business. I mean, low yielding business works well for larger Hotels with lots of rooms because they've got the capacity to accommodate more say in a case a hotel with 8000 rooms for example then you put 50 rooms at a lower rate, it brings your average down slightly than if you have 60 rooms, So, there is a high top-end market of Chinese tourists that do fall into the same category that we've just described a few minutes ago. But it's not something that I've specifically pursued first-hand.

Table 4.10 - Responses to whether technology has a role to play in attracting Chinese tourists and why:

Comment	
R1	Absolutely – they travel with their devices; this can be supported with infrastructure. Remote areas without signal. Wildlife/safaris. Must support their mobile phones. Reliable infrastructure.
R2	Most definitely – difficult to reach tourists otherwise. Comparing Social media vs word of mouth (the same isn't it?). The marketing is still by word of mouth that is spread via different medium and the common medium now is social media. Prior to visiting tourists can do a virtual tour which gives you a clearer image of the accommodation than a picture. Infrastructure, different cultures, are they welcome (they want to know), quality of service. Naspers and Tencent have the major roles to play and 5G presents a definite opportunity e.g. embedded chip into baggage developed in China rolled out in their airports.
R3	Yes. The Chinese tourists are very tech-savvy hence technology should give many opportunities to reach the Chinese tourists. There is a need to identify how exactly to reach them, perhaps through their own channels and applications or designing technologies similar to theirs.
R4	Well, I think this question is very important. I have to say it's not as much as you think. In terms of connectivity, China is now rolling out 5G we (Cape Town) are still struggling with 4G. In terms of payments, China uses WeChat for almost everything, even loyalty or promotions are sent via WeChat. To shop in South Africa using snap scan or you need to have a South African bank account. In health, South Africa has a lot of paperwork which delays the speed of being attended whereas in China it's all paperless. For every 100 patients, an SA doctor attends a Chinese can attend 3000-5000 patients. So, No.
R5	Huge. Walking tours with audio – this is not big in SA but available in other countries. Online material/content will assist with communication and translation because they are tech-savvy. Communication is a problem; it would be better if there was an app that speaks in a language that you understand.
R6	Yes. So, what happens with attractions. like even myself, if I want to go like for example Bangkok and go to the heritage site or anywhere else for that matter or when I go back to New York I just go to Google Maps and I look at what's there but attractions like Table Mountain, Kirstenbosch Botanical Garden and Waterfront all of them, so they could make better use of technology, without other apps other than Google Maps and Facebook, because Google doesn't exist in China, and Facebook doesn't exist. So, what they can do is they can offer an experience similar to their own experience before people even come to the destination people can do their research and experience in the place they might like. Because the whole concept of travelling starts before you go, if you think about it, while you actually travelling, you're not that excited until afterwards when you're reminiscing about it. So that's normal for any human being, regardless of whether you are Chinese, Japanese or American. So, if they can digitize these attractions, especially now, and have like a virtual experience that will encourage them to come and it will enhance their marketing exposure and advance. Because this is what you're competing against in China, if you don't have something rich or in a 3D friendly format, you are basically losing out. So virtual tours and things like that.
R7	No, I don't think that somebody to go to a particular destination because it's a smart city or choose a city because it would have the most technology or which destination would be considered a smart city or smart destination. but I think tourists specifically with deciding the destination based on the destination having a high or low level of technology. Chinese tourists in particular, chose to visit Cape Town, to experience our culture. I do not think technology will be an influencer or big influencer in the decision making, but ability. In Israel, cannot be. There are some things though that influence experience, for example, something that is unique to Tel Aviv. The first time that I visited, what made an impact in my experience with electric scooters. So, let's consider the impact technology had on me. Going to the destination, in fact, didn't even know about them until I was there, but it gave me an appreciation. It's a fun and affordable way to get around. Again, as I have explained to you and using my own example, traveller returns home with a positive sentiment and might recommend somebody else to consider the destination.

Table 4.11 - Responses to how could technology assist with attractions:

	Comment
R1	They generally know what they want to visit before they arrive. Virtual videos. Weather forecasts (like Table Mountain and Robben Island). Addressing these using technology.
R2	Tourist expectation and Tourist behaviour. Enjoy their own cooking and own food types. They want to know where can they find it? Tech should tell and show them. Which devices work here to assist in planning? They will be more insurance conscious due to Covid-19. Reduce waiting queues at Table Mountain for instance and save Chinese tourist time when visiting attractions as they do things in a hurry. They can use notifications.
R3	By providing Chinese language and signage or some form of communication in attraction centres. Real-time waiting times on ques in Table Mountain Robben Island as most review complaints are on waiting times and delays.
R4	Network Coverage is very poor in some areas in Cape Town, at tourist attraction centres like Cape Point due to environment Act. In the wine lands, there is a walk-in video tour that gives you information, history and background of many points but there is no Chinese language support in the language options although there are other languages. Like in Franschhoek its more complications when the language is in Xhosa or Afrikaans. More videos and more websites and applications are needed.
R5	App to provide a more accurate and reliable experience. Provide a personal experience and flexible individualised tours. More accurate detailed location services showing distances to and from common places
R6	For example, in an attraction like Table Mountain or Kirsten Bosch or any other, or cape point, what would happen is, in a Chinese city is that at all these attractions, they will have what they call QR codes. QR codes, are very convenient little squares, that you point to and scan information on anything is shown. I just scan it, and everything is in my phone, for example, if I am on Table Mountain and I want to understand about Maclear's beacon, the highest point in Table Mountain there can be a QR code engraved in stone, so when Chinese customer or any other traveller will scan it, and they will know immediately all the information about Maclear's beacon. They can also be geolocated, pointing the direction of going back to the Table Mountain, cable car. Same thing in Robben Island, all over in Madiba south, just imagine how rich the experience will be. If that experience for them is good, that addresses their challenge because they have a difficult challenge with language. They are one of the few countries in the world that do not speak English as much as other countries. So, if they can read from a translator, they can pick up everything in their own language. They don't need to have a translator (human) with them, and it will enhance the experience so significantly. For example, I don't know if you guys have had this experience but if you go into a restaurant. Let's just say in China, and you read off a menu, and the menu is in Chinese but there are few pictures. Your choice will be very limited. You will just order what you think it is, limited to the pictures. However, if you are able to scan on that menu and immediately translate it into a language, you're comfortable with. You will order just about anything from that menu, and you would spend more. So, for example, Groot Constantia wine farm right. A lot of Chinese people don't carry cash because they're not used to carrying cash. So, the only way they can pay is through union pay or cash, but often they don't carry cash on them. So, what happened was that union pay the competitor of MasterCard and Visa, but China doesn't have MasterCard and Visa. So, when Chinese people want to buy wine or anything, they had to first withdraw money then come back and pay. But since Groot Constantia introduced union pay payment acceptance and if they had accepted WeChat pay it would have been even better. Their sales have gone on up 300% to Chinese people through the convenience of paying. So, the CoCT can do a lot to allow businesses to become China-ready. By becoming China ready, they can pick up on these things like electronic payments on WeChat pay and other things like that.
R7	Just to go back to some of the things I have said. Creating positive sentiment, I think is going to be a driver in the decision making and word of mouth surely, but my feeling is people are the greatest salespeople. Like, when you return from a destination you've got photographs with amazing TV and YouTube, you know with passion and excitement about positive experiences, and it's definitely going to influence on your friend or your family or your colleagues or whoever is listening, and it's definitely going to pick the interest, and possibly they could end up being the next tourist.

Table 4.12 - Responses to how technology can assist with accommodation:

Comment	
R1	The Chinese tourists want to know beforehand visiting where they are going to sleep, the duration of stay. Food is very important they love eating/mealtimes. Want to know the menu, so it must be designed for the Chinese market, expect to eat what they eat at home. Adapt the menu to suit the Chinese tourist
R2	Walkthrough via virtual tour technology that gives a better picture of accommodation prior to booking. Assist with bookings via apps
R3	Providing Chinese language option on booking websites and applications. Live reviews and feedback to managers.
R4	They can have a site that provides a Chinese interface that communicates with booking.com and websites like SA Airways in their language.
R5	Already many accommodation websites – not SA owned, which means it's being marketed by those that do not know SA. They are vague and inaccurate information provided in marketing about specific details. There is need for integrated services as well.
R6	The first thing is contactless check-in, where you could go and once you within the range, you immediately get a notification to tell your room number, so you go to your room. With contactless key and you don't even touch the door, the door just opens automatically. And your luggage comes through later or whatever. So, there's a lot of innovation happening in that space with accommodation. And also, more information about when especially now people are wanting to know when my room was cleaned when it was properly sanitized. When was it last stayed in so there's a lot of data collection on accommodation people are going to want to demand before they enter, you know, it will be more about health and safety?
R7	Seamlessly payments without any risk. As far as accommodation is concerned, you also want to be able to know about your booked accommodation in advance, making all prices seamless for the user experience going through the booking engines side of things. Ensuring security and providing confidence to the booker. The devices can go further, go to seamless check-in you know to ever seen this check-in a third time because you can pre-check yourself in online. And you can even bypass reception, for example, you may be sent a digital key that you can just use it to unlock your hotel room door.

Table 4.13 - Responses to how technology can assist with transportation:

Comment	
R1	Apply technology in Flight/ Road transport. Support Groups via coach. Online booking ahead of time. Ways to ensure safety.
R2	Concerns in Cruise liner / Airport "is the air that I breathe clean?" Confidence. Convenience. Technology can assist with this. Push notifications via mobile with updates to reduce time wastage. Travel in groups. Less of a problem then. Individual travellers will use public transport. They are used to their own version of Uber in China. Most travel in groups so technology. They are using the 5g technology
R3	Use technology to provide more reliable and cheap transport information to avoid congestion.
R4	In transport security issues are the most concern.
R5	Our public transport is a nightmare and unsafe. An app could assist here. Prevent unethical practices in transport.
R6	In transportation, again, similar to the Uber experience they have got DD in China, which is a much more seamless and more user-friendly experience than Uber.is. But what they've got is a range of transportation opportunities for example. It's not just about private taxis but it's all about public transport. And I know the city had been doing a great job in MyCiTi, but it's not penetrated. And there's not enough user-friendly information for tourists to just access that easily unless you live in the city bowl area. Public transport is a big thing so I think the city can do a lot more by digitizing things like timetables and make it readily available in the Chinese language and also
R7	Shared transport, when you don't know the country, you're not familiar with things and they need to be able to guide one's way, we want to read solve the public transport book and pay for tickets, the timetables won't be provided. You know borrow kick that for years, and probably some sentiment around support services.

Table 4.14 - Responses to how technology could assist with support services in the tourism industry:

	Comment
R1	Pre-check-in of ID photos, names before they arrive. Improve communication between operator and tourist. More personalized experience. Better customer experience.
R2	Information upfront…safety and security (insurance). Hospitals and medical care auxiliary services, procedures and quarantine facilities are jumping up the importance ladder taking over the old higher needs such as forex exchange, where to stay. Can be supported through technology via push notifications. Expect free Wi-Fi. Post photos. Emergency services can alleviate fears and promote options.
R3	Creating more welcoming environments for Chinese tourists. Offering the things they like food etc. and in their language. Government leads and initiatives.
R4	language translation support will assist Chinese to communicate better. The Wi-Fi offered in restaurants does not support many users as it is not like the industrial ones.
R5	An app could help with restaurants. Recommend local tourism and tours. Brochures are not interactive enough they do not provide personal interaction.
R6	So, support services are huge, you know, that is, to me, things like the film industry, the catering side, the mice business events business. And this is a huge industry on its own, and it's a multi-billion-dollar industry. Just those services supporting tourism. Tour guides, as well, all of that makes it easier through technology So I think, I mean, if I had to immediately prioritize what would be the first thing is guides, even with or without technology we need Chinese speaking guides. Now, there's a lot of opportunities there for people locally to learn and understand Chinese, like the very basic Chinese, you know there is the human interaction because digital can't replace that, something as simple as saying Niihau Nisha even just a few words will make them feel very comfortable.
R7	I mean, a lot of the things in these points will also benefit our local population tremendously and I also think, just to go back to some of what the city's done with the rollout of fibre and that I mean is brilliant for the local population. So yeah, they can benefit from it, too from these developments.

Table 4.15 - Responses to other comments that you would like to make, that would assist the aim of this study:

	Comment
R1	China is a very important market for Cape Town, and it should surpass the European market.
R2	Can be supported through technology via push notifications. Expect free Wi-Fi. Post photos. Emergency services can alleviate fears and promote options.
R3	The government also plays a big role in regulation and promoting Cape Town as a destination. Thus, stronger ties are needed between China and Cape Town.
R4	Communication is very critical; it makes everything else possible even this interview we are having (Connectivity). The most sought for attractions are Cape Point and Table Mountain. Cape point mostly because it appears in history studies but due to the environment protection act, there have been complaints about the phone signal in Cape point. WeChat is still more convenient than UnionPay. The research should take technology as a means of achieving an end and focus on it assisting tourism as an enabler and then focus on what Cape Town has such as fresh air and free open land.
R5	The Chinese market is a huge market. We should become a popular destination market for Chinese. Our outdoor, natural environment are great attractions. Our figures are good if you look at the needs of the world. We need to offer good value. The government should support small operators. We need to know what they are being offered by their tours in other destinations. That is a very interesting question: How are they travelling to other destinations? I do not know But I know is that we are not we are not equipped in that.
R6	From what we are doing from a tourism perspective, throughout South Africa is to become more China-friendly, the most important thing is our relationship with Tencent. Tencent happens to be a major strategic partner of Nespas. Now listed in Europe, or Frankfurt or somewhere. And, that company is very progressive together with Alibaba. And we have set up a relationship with them on many fronts. The first is obviously WeChat pay, and next week we're having an engagement with the banks to help accelerate WeChat pay in South Africa. There's also the WeChat mini

	program and other related platforms to help our tourism businesses to get more digital already. So I think the first thing is this because your cause looks like it's tied very closely to the economic development of South Africa, the first thing is to focus on the opportunities for local tourism businesses, whether it's the restaurant or accommodation or attraction or transport people, for them to become China-ready through technology and that's a big focus area. The economic impact of that should not be underestimated. What we're doing at the government level is enabling that by bringing through the likes of WeChat pay; Ali pay and various other tools to enable people to actually participate more in this virtual economy. So that is where we are focused, economically.	
R7	Word of mouth is not something that we can measure but I think word of mouth is crucial. People are salespeople, and, like when you have returned from a destination you've got photographs, social media, blogs, and YouTube, you know with passion and excitement about positive experiences and it's going to have a positive influence on your friend or your family or your colleagues or whoever is listening. It's definitely going to pick their interest, and possibly, I could end up being the next tourist,	

4.4   Summary of key words of findings, themes and categories of phase one

Appendices A - E show full responses and the detailed corresponding key words, themes and categories to questions 1-5 respectively. The following tables show a summary of the key words, themes and categories deduced from the responses that were obtained from the in-depth interviews and consequently, corresponding summarised key themes and categories.

Table 4.16 - Summary of keywords and themes of responses to how the City of Cape is positioning ICT at the centre of its socio-economic development agenda:

	Key Words	Themes	Categories
R1	Prosperity and productivity enabling environment, Start-ups/SMEs/Entrepreneurs/venture capitalist/incubation, platforms/finance and services	Support, innovation, Finance	Financial Support
R2	Access e-Centres in communities, Invest R1.98 billion on fibre, infrastructure	Fibre infrastructure investments	Fibre Rollout projects
R3	GDP growth, internet adoption, Digital Opportunities Implementation Framework, Broadband Strategic Framework challenges	adoption Digital Opportunities Implementation Framework Broadband Strategic Framework	Digital Frameworks
R4	Adoption- Digital Opportunities, Implementation Framework, Broadband Strategic Framework	Digital Frameworks	Digital Frameworks

Table 4.17 - Summary of keywords, themes and categories of the responses to the CoCT's efforts to improving access to ICT especially broadband:

	Key Words	Themes	Categories
R1	Broadband infrastructure, costs reduction, future	Broadband costs.	Broadband affordability
R2	Smart Cape, Free Internet, Wi-Fi Hotspots, Offices, school Wi-Fi,	Smart Cape Free Wi-Fi	Broadband accessibility
R3	Broadband strategic Framework, telecommunications Infrastructure	Broadband Framework	Broadband infrastructure
R4	DEDAT economic development strategies, job creation	Skills development, job creation	Economic empowerment

Table 4.18 - Summary of keywords, themes and categories to the CoCT's efforts to improve accountability, efficiency and openness through ICT:

	Key Words	Themes	Categories
R1	Cluster collaboration, Support Cape Innovation Technology Initiative Public buildings fibre connectivity	Collaboration, Support fibre connectivity	Private-public collaboration
R2	DGS, Digital Transformation Plan e-learning e-Health, digital empowerment of residents and employees	Digital Transformation Plan empowerment of residents and employees	Digital economic empowerment
R3	DEDAT infrastructure and fibre capacity investment public Wi-Fi.	Fibre capacity rollout	Broadband accessibility.
R4	Digital adoption focus citizen access to broadband the Connected Citizen	Digital adoption Connected Citizen	Broadband accessibility.

Table 4.19 - Summary of keywords, themes and categories of responses to the CoCT efforts to put the private sector first:

	Key Words	Themes	Categories
R1	Skills collaboration with the private sector, Wesgro, ICT sector, job creation, productivity, marketing	Private sector collaboration	Public-private partnerships
R2	Business-friendly city, Wesgro	Business Support	Business enabling environment
R3	Broadband diffusion, connected Leadership, Connected Citizens and Connected Business.	Business and Citizen participation	Digital open government
R4	Internet access, opportunities markets, businesses in the local,	Internet, opportunities	Digital Connectivity

	national and international space.		

Table 4.20 - Summary of keywords, themes and categories of responses to the CoCT's efforts to leverage ICT to promote sustainable development:

	Key Words	Themes	Categories
R1	Women in business programs businesses workshops, Inspirational and practical discussions, networking opportunities, small group mentoring, introduction to business and digital tools. collaboration with key stakeholders.	Women in business, programs, support, digital tools, collaboration	Women in business support tools
R2	Broadband access by 2030, affordable high-speed broadband skills to effectively utilise infrastructure using broadband daily. The Cape Access project for less privileged and rural communities.	Affordable broadband access for all	Broadband accessibility
R3	The Provincial Strategic Plan, growth and development of the provincial economy through the support of broadband usage.	Growth through broadband usage.	Broadband accessibility and support.
R4	Cape IT Initiative, Wesgro, IP regulation - Coordination and Management in the Regulatory Environment, and the models for government	Programs and government models	Support programs and initiatives

4.5   Summary of keywords and findings of phase two of the data collection.

Appendices F - N show full responses and the detailed corresponding key words, themes and categories to questions 1-5 respectively. The following tables show a summary of key words, themes and categories deduced from the responses that were obtained from the in-depth interviews.

Table 4.21 - Summary of keywords, themes and categories, and elaboration of responses to whether attracting Chinese tourists present a unique challenge, over tourists from other countries:

	Key Words	Themes	Categories
R1	SA guide (legislation), otherwise SA guides lose out. Language is a barrier English especially to the elderly.	Legislation Local guides Language	Legislation Local support Language Barrier
R2	Language is a barrier, Distance from China, SA is a long-haul destination market, WC is a unique destination Stigma - the Covid-19 virus CT is not cheap but good value as it attracts the high end of the market	Language Long haul destination Safety Cost High-end market	Language barrier Distance Safety concerns Prestigious destination
R3	Language barrier which remains a challenge SA and Cape Town perceived as an exotic destination. Flights and relevant. rules and regulations that prevent additional promotion or information. Safety and Security issues- but personal safety, data protection. Flexibility in targeting a new segment from the Chinese visitor. We have to target on the relevant platforms such as Alibaba, WeChat etc to engage the Chinese audience, engagement targeting the corporate and incentive market.	Language barrier Flights Exotic destination Rules and regulations Safety Niche marketing Marketing platforms	Language barrier Distance Prestigious destination Legislation Safety Marketing barriers
R4	Geographic distance, no direct flight, old age, safety concerns arising from social media, health and safety concerns.	Distance, Old age Safety Health	Distance Market Demographics Safety Concerns
R5	Language barrier, Distance from, South Africa is a high-value destination, not cheap, good value, few tour guides speak Chinese, price conscious.	Language barrier, Distance high-value destination, not cheap, good value,	Language barrier Distance Prestigious destination
R6	Paperless society, electronic, that it's impossible for me to compare yourself to a Chinese, the tourism continuum process is digital. challenge. For example, you don't find contactless payments, the digital experience, China ready.	Paperless, electronic, Digital tourism continuum	Digital lifestyle Digital tourism
R7	Language; VISA and Flights	Visa Regulations and flights	Visa Regulations and Accessibility

Table 4.22 - Summary of keywords, themes and categories of responses to how Cape Town could do better at attracting Chinese tourists:

	Key Words	Themes	Categories
R1	Communication, customised, notifications, Passenger liners	Customised services Notification	Personalised services
R2	Closed economy WeTransfer/UnionPay don't support Visa and Mastercard.	Financial restrictions Legislation Safety	Legislation Safety Local Support

	Financial platforms. language and safety and security. No individual tours. Circulation of money is locked into Chinese tour operators, restaurants, Chinese tours. Real obstacle. Youth market is great potential as, wildlife, other iconic attractions. Europe to iconic shops buy original they want to buy experience and prestigious.	Niche markets Wildlife tourism	Exotic attractions
R3	marketing strategy to niche markets	Niche Marketing	Niche Marketing
R4	1.8 million in Cape Town. China tourism expos, WeChat media, much faster than Facebook.	Social media marketing Tourism expos	Marketing channels
R5	price-conscious – costing models to attract. Outdoor packages, arrange their own itineraries upfront especially for young and. Love safaris (especially older client).	Pricing, outdoor packages Youth and Elderly	Tour Products and Pricing strategies
R6	WeChat pay cross border payments. WeChat mini-programs, geolocation destination, digital experience for them, Layout fibre to make it more digital. few free data, become China-ready and understand China ready.	Digital Payment platforms, Geolocation services, fibre optic	Digital payment platforms, Geolocation services, telecommunications infrastructure
R7	Safety – perceptions, Accessible and direct flights to Cape Town. Rates - Influenced by lower pricing for hotels. Travel in groups. Known for low-yielding business.	Safety, Accessibility	Safety, Accessibility

Table 4.23 - Summary of keywords, themes and categories of responses to whether technology has a role to play in attracting Chinese tourists and why:

	Key Words	Themes	Categories
R1	Remote areas, Wildlife/safaris, infrastructure.	Wireless Signal, remote areas	Telecommunications infrastructure
R2	Social media vs word of mouth, Marketing different medium, social media, virtual tour, accommodation, Infrastructure, different cultures, Naspers and Tencent role, 5G opportunity, Embedded chip airports	Marketing medium 5G social media, virtual tour	Marketing medium social media, virtual tour 5G Telecommunication
R3	tech-savvy, hence technology should give many opportunities to reach the Chinese tourists. channels and applications	Marketing, applications.	Marketing channels
R4	5G, uses WeChat loyalty or promotions are sent via WeChat, China it's all paperless.	5G, Social media, electronic	5G Telecommunication Social media, Digitalisation
R5	Huge. Walking tours with audio, Online material/content translation because they are tech-savvy, communication, app language.	Audio tour guides, language barrier, translation	Digital tour guides Chinese language support

R6	without the Google Maps and Facebook, digitize these attractions, virtual experience, marketing virtual tours	Different applications Digital Marketing	Legal restrictions Digital marketing
R7	People don't necessarily get attracted to a smart city, but it does enhance their stay while they are here. Experience culture; people; scenery; wildlife, etc.	Technology as an enabler	Technology integration

Table 4.24 - Summary of keywords, themes and categories of responses to how could technology assist with aspects such as attractions:

	Key Words	Themes	Categories
R1	Prior knowledge of destination. Virtual videos. Weather forecasts (like Table Mountain and Robben Island).	Self-preparation Digital marketing Table Mountain Robben Island resorts	Digital marketing Preparation
R2	Expectation, behaviour, traditional foods, Technology enabler, for planning, Insurance, waiting queues at Table Mountain, Notifications.	Culture and food preservation, Delays	Hotel Amenities Time conservation
R3	Chinese signage, Real-time waiting times, Table complaints on waiting times	Communication, Language barrier, tour guiding Delays	Digital tour guide, Time conservation
R4	Network Coverage, Cape Point, environment Act, walk-in video tour - no Chinese language support more websites and applications are needed.	Cape Point Network Coverage, Legal restrictions Language barrier Digital marketing	Digital tour guide Telecoms infrastructure, Legal infrastructure
R5	Personal experience and flexible tours. location services	Personalised experiences, geolocation services	Digital experience, time conservation
R6	QR codes, the highest point in Table Mountain geo-located, language. enhance the experience scan, union pay MasterCard and Visa, WeChat pay	QR codes WeChat Pay	Digital experience services International digital payments
R7	Technology enhancement – in booking and use technology to minimise delays pay – book in advance – high tech experience.	Digital experience	Digital experience services

Table 4.25 - Summary of keywords, themes and categories of responses to how technology can assist with accommodation:

	Key Words	Themes	Categories
R1	Budget, traditional foods eating/mealtimes, menus must be designed for Chinese	Food and Culture Offering	Food and Culture Offering, Language support
R2	Walkthrough via virtual tour technology	Virtual tours	Digital tours
R3	Chinese language on booking websites and applications	Website language support	Website language support
R4	Booking websites and SA Airways integrated into Chinese sites.	Website language support	Website language support
R5	accommodation websites – not SA vague and inaccurate information provided integrated services as well.	Local booking websites	Local booking websites
R6	Notification services on room services, properly sanitize, data collection on accommodation more about health and safety.	Notification services, Information sharing	Notification services, Information sharing
R7	Seamless check-in processes. Digital key - locks.	Digital online check-in	Digital services

Table 4.26 - Summary of keywords, themes and categories of responses to how technology can assist with transportation:

	Key Words	Themes	Categories
R1	Flight/ Road transport, Groups via coach, ensure safety.	Safety, Group travel	Safety, Group travel
R2	Clean air? Push notifications will use public transport, using 5g technology.	Push notification services in Health 5G technology	Digital experience services in Health 5G telecommunication
R3	Reliable and cheap transport information	Information Sharing services	Information Sharing services
R4	security issues	Safety	Safety

R5	Public transport unsafe, unethical practices in transport.	Public transport regulation and reliability	Transport regulation Reliability and safety
R6	DD in China, more seamless, a range of transportation public transport, MyCiTi is not penetrated more by digitizing timetables Chinese language	More seamless e-hailing and taxi services, transport information, language support	Digital transport, language support
R7	Shared transport, guide on the public transport, book and pay for tickets, the timetables, sentiment around support services.	Shared transport	Digital transport information

Table 4.27 - Summary of keywords, themes and categories of responses to how could technology assist with aspects such as support services in the tourism industry:

	Key Words	Themes	Categories
R1	Improve communication	Communication	Communication, Digital experience
R2	Information upfront…safety and security (insurance). Hospitals and medical care auxiliary services, via push notifications. Expect free Wi-Fi. Emergency services can alleviate fears and promote options.	Information sharing, Safety, Push Notifications Wi-Fi connectivity	Digital Ancillary Services Digital Connectivity
R3	Welcoming environments, language, Government initiatives	Language, Government support	Language, Government support
R4	Language translation. The Wi-Fi support many users.	Language, Wi-Fi services	Language, Digital Connectivity
R5	An app to inform, recommend local tourism and tours. Brochures are not interactive	Electronic Brochures	Digital brochures, guides
R6	The film industry, the catering side, the mice business, multi-billion-dollar industry, just those services supporting tourism. Chinese speaking guides, very basic Chinese, feel comfortable.	Multi-billion-dollar industry, Chinese guides	Investment opportunities, Language learning
R7	Technology for the local population	Local benefit	Local development

Table 4.28 - Summary of keywords, themes and categories of responses to other comments that you would like to make, that would assist the aim of this study:

	Key Words	Themes	Categories
R1	Very important market, surpass the European market.	Important Market	Potential market growth
R2	Push notifications, free Wi-Fi.	Information sharing, Push notifications	Information sharing, Push notifications
R3	Government promoting Cape Town, stronger ties between China and Cape Town	Promotions	Marketing
R4	Connectivity, Cape Point and Table Mountain. Cape point mostly because it appears in	Network Coverage, Historic sites, Nature, Digital Payments	Digital Connectivity, Network Coverage, Historic sites, Nature attractions, Digital Payments

	history studies, about the signal in Cape point. WeChat is more convenient than UnionPay, technology enabler, Cape Town's fresh air and free open land.			
R5	Chinese huge market. Our outdoor, natural environment are great attractions, Government support small operators. know what they are being offered in other destination, we are not equipped in that.	Huge market, Nature attraction, Need to explore	Crucial market, Nature attractions	
R6	Become more China-friendly, relationship with Tencent, strategic partner of Nespas, Alibaba many fronts, WeChat pay, WeChat pay in South Africa. WeChat mini-program, digital-ready. opportunities for local tourism, to become China-ready through technology economic impact government WeChat pay, Ali pay other tools virtual economy.	Strategic partnership with Tech giants, digital readiness, WeChat Pay, Ali Pay.	Digital readiness, Business partnerships, Digital payment Platforms	
R7	Not attracting but enhancing the experience. Return with positive sentiment which could influence relatives to come to Cape Town.	Technological enhancement	Digital services	

Table 4.29 Summary of responses to questions posed to tourism sector stakeholders based on their respective interviews:

	Question	R1	R2	R3	R4	R5	R6	R7		Yes	No
1	Do you believe that attracting Chinese tourists present a unique challenge, over tourists from other countries?	Yes	Yes	Yes	Yes	Yes	Yes	Yes		100 %	0 %
2	Do you believe that technology has a role to play in attracting Chinese tourists?	Yes	Yes	Yes	No	yes	Yes	No		71 %	29 %
		2	2	2	1	2	2	2			
		0	0	0	1	0	0	0			

4.6   Summary

The findings of phase one identified attributes that illustrate Cape Town as a developing smart city that is adopting ICT to shape its liveability and sustainability. Cape Town local government relies on well-structured and reviewed implementation policies. The results validated the importance of public-private partnerships, support programs, financial support and broadband accessibility to the public. Digitalisation through broadband access was unearthed as a critical foundation of smart city development.

The Phase two revealed findings from the tourism sector. The key findings include the following:

- China is an emerging crucial tourist source market that regards Cape Town as an exotic and prestigious destination.
- The major challenge with the Chinese market includes distance, language, packages and travel regulations.
- Cape Town can attract more Chinese tourists through offering personalised services, better pricing and payment platforms.
- The government and institutions can offer information-sharing services, improved travel regulations and visa requirements, and direct flights.
- Digital experiences can improve services through the continuous and rapid development of broadband infrastructure to support 5G and increase accessibility in tourist attraction centres.

Chapter four presented the findings of this study, identifying the themes and categories in congruence with the research questions. The findings were deduced by a thematic analysis of the data that was collected from the interviews. The study revealed the efforts of Cape Town to develop into a smart city and consequently a smart destination. The preceding interviews revealed the challenges faced in tourism and how Cape Town can harness technologies in tourism while attracting Chinese tourists. The following Chapter analyses these findings through the provision of a converged interpretation of the two phases.

CHAPTER FIVE: ANALYSIS

5.1   Introduction

This chapter provides an analysis of the results of this explorative study presenting imperative findings and interpretations. By applying a thematic analysis, the common themes that emerged were further divided into content-related categories. The categories were synthesised and articulated with the guide of the literature. Figure 5.1 below shows a step-by-step process of how the thematic analysis was carried out.
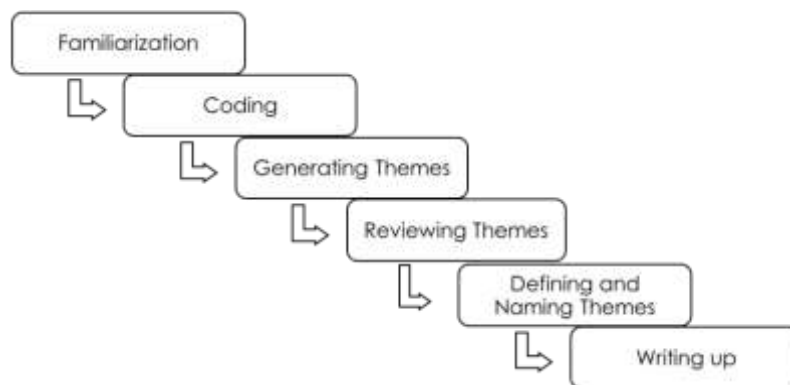
Figure 5:1 Thematic analysis six step process

Adapted from Doorninck (2012)(Doorninck, 2012)

The thematic analysis allowed to draw categories from the interviews' responses, which in turn guided the interpretation of the results. The comprehension of data revealed underlying inherent ontologies and theories of developing Cape Town as a smart destination tailored for Chinese tourists. The data findings aimed to ascertain the smart city plans in tandem with current and future tourism ideologies. Consequently, this will determine smart tourism as a potential peculiar wealth creation model focusing on a new growth market (China) for Cape Town. The study attests the opportunities, drawbacks, and the stakes to realizing the dynamics of the smart city in the African context, theorizing the selection, constructing different explanations, combining facts, and exposing the obvious and the unknown. This section provides a reconstruction of the underlying structures of Cape Town smart destination and the self-comprehension of participants with a holistic interpretation.

The familiarization stage was addressed in chapter four when data was gathered from findings. Data coding stage of identifying concepts through constant comparison achieved through a repetitive reading of transcripts. The identified repetitive key words concepts generated themes

that are presented in the Appendices A-N. Themes are named into categories and written up in this chapter.

5.2 Findings and interpretations of phase one

- The following were key findings in relation to Cape Town's efforts to developments towards becoming a smart city:
- The CoCT has been supporting the growth and development of the ICT sector in Cape Town to impact poverty alleviation as well as create prosperity and productivity through the provision of an enabling environment for the ICT sector to thrive in Cape Town.
- The CoCT continues to invest heavily in IT infrastructure, installing fibre-optic cables and supporting fibre infrastructure.
- The Western Cape Government plans to continue expanding the number of free Wi-Fi hotspots at government buildings, offices, libraries, schools and clinics.
- The Western Cape Broadband Initiative aims that by 2030, every citizen will have access to affordable high-speed broadband infrastructure and services.
- Commerce and Industry need to develop software solutions (like mobile applications) to benefit from the extensive investment in broadband in and around Cape Town.

The above-mentioned findings led to the following interpretations:

- The efforts of CoCT typify Cape Town as a developing smart city that uses ICT to shape its liveability and sustainability. The city is dedicated to promoting the growth and development of the economy through the investment in and support of ICT.
- The city's primary focus areas are in the provision and access to ICT for its citizens, business support, citizen participation, public-private partnerships and in so doing provide opportunities for economic growth. The efforts and aims of CoCT are parallel to Smart Africa's vision of creating affordable connectivity rates in Africa.
- ICT's strategic goals are to bridge the digital divide through digital transformation by increasing digital connectivity and in turn, promoting digital economic empowerment. These findings suggest that Cape Town can contribute to the Smart Africa initiative.
- The value proposition of the study is a commentary on smart cities and the socio-economic development of Africa. This would advise ICT strategies, policies and city officials in their transformation towards smart cities, particularly in Africa.

5.3 Findings and interpretations of phase two

The following key findings and interpretations emanated from the in-depth interviews with the tourism stakeholders:

- China is an emerging crucial tourist source market that regards Cape Town as an exotic and prestigious destination.
- The main challenges with the Chinese include market inflexible flight distance, language, packages and travel regulations.
- Cape Town can attract more Chinese tourists through offering personalised services, better pricing and payment platforms.
- Digital tourism can be used to enhance the touristic experience of Chinese tourism.
- Digital connectively is the primary initiative that enables the provision of other IoT services.
- Cape Town needs to become China-ready by becoming digitally connected and preparing a wide adoption of 5G and IoT devices.
- Connectivity is a challenge in tourist attraction centres around Cape Town.
- The government and institutions can offer information-sharing services, improved travel regulations and visa requirements, and direct flights.

From these findings, the following interpretations were deduced:

- The tourism stakeholders in Cape Town acknowledge China as an emerging tourist market source that possesses great revenue potential. Although there are some plans to attract Chinese tourists, not much effort has been done.
- There is a need to address market barriers to penetrate the Chinese tourist market.
- Digital experiences and services are enablers of smart tourism. Heritage historical sites are a major attraction to Chinese tourists, which need to be preserved. Although preservation of historic attraction centres is crucial, there is a need to implement digital experiences and improve connectivity without compromising their historical value.
- The development of broadband infrastructure will expedite digital connectivity in Cape Town and prepare for the wide use of 5G.

5.4   Summary of Interpretations

The findings and interpretations of the explorative study unearthed the smart city development plans in Cape Town and how they have been implemented, and ultimately how they align with the Smart Africa Manifesto. It consequently explored the opportunities that lie in the digital tourism experience. The study discovered several digital touristic experiences that can be implemented in Cape Town tourism for international tourists, including Chinese tourists. Table 5.1 below shows a summary of the categories identified in the data analysis.

Table 5.1 Summary of Categories and Dimensions of tourism journey

Phase one Categories	Phase two categories
Broadband accessibility	Business partnerships
Broadband infrastructure	Digital readiness, Digital brochures, guides, Digital tour guides, virtual tour Chinese language support
Business enabling environment	Digital payment Platforms
Digital Connectivity	Digital tours
Digital economic empowerment	Food and Culture Offering
Digital Frameworks	Geolocation services,
Digital Frameworks	Investment opportunities, Local Support, Local booking websites
Digital open government	Language learning and support
Fibre Rollout projects	Security and Safety
Financial Support	Legal restrictions, Legislation
Private-public collaboration	Local development
	Technology integration
	Website language support
	Personalised services
	Exotic attractions
	Niche Marketing
	Tour Products and Pricing strategies
	Telecommunications infrastructure
	Marketing mediums, channels, social media,
	Telecommunications infrastructure, 5G telecommunication
	Social media, Digitalisation

Although the WCPG strategic framework recognises tourism as one of its digital strategy's focus areas in Cape Town, their smart city initiatives are centred upon citizens of Cape Town. In parallel with one of the NDT objectives, the tourism sector acknowledges China as an emerging potential tourist market. The WCPG digital experiences can improve services through the continuous and rapid development of broadband infrastructure to support 5G and increase accessibility in tourist attraction centres. The WCPG broadband rollout projects align with the Smart Africa Alliance and SDG's objectives of establishing universal connectivity.

CHAPTER SIX: CONCLUSION

6.1   Introduction

This chapter discusses the conclusions, limitations, contributions and recommendations of the explorative study that aimed to discover how Cape Town can be developed to be a smart destination, and how the digital touristic experience can be developed inclusively for Chinese tourists.

This study began with an Introduction (Chapter one) that presented a general overview, background of the study and a scope of the research. The key outline was the importance of the Chinese tourist market and how it has emerged and grown to be the largest source market for several years. The purposes of the research were outlined and explained along with the research design and structure.

The Literature Review (Chapter two) reviewed the literature on China's tourism market, smart cities /destinations, Cape Town tourism and the theoretical framework guiding the rationale of the study. The rapid growth of Chinese tourism began a few decades ago but has since accumulated rich research awareness. The chapter explores several theoretical frameworks and identifies the ANT network as the most suitable in analysing the smart city frameworks and their applicability to Cape Town smart tourism.

This gave insight into the main focus of the research and its characteristics. The research plan and design (Chapter three) explored the methodology and design applied to achieve the objectives of the study. Subsequently, the discovered research findings (Chapter four) presented the results that were obtained from the data collection and a brief synthesis of the results. The Analysis discussed the findings and results of the qualitative data analysis and extrapolated the findings.

The Conclusion (Chapter six) presents the culmination of discoveries, recommendations and contributions from the research based on the research objectives. It firstly determines whether the research objectives and questions were addressed. The objectives of the research were:
- To determine the extent to which Cape Town can satisfy Chinese tourists in terms of smart city technology and services.
- To establish and make recommendations to smart city stakeholders on how a smart destination that specifically caters to the Chinese market can be achieved.

Research Questions:
- What smart city initiatives exist in Cape Town?

- How have other smart cities implemented internet of things (IoT) to bring about smart city status?
- How can Cape Town improve its focus on Chinese tourists using smart devices?

The following sections recalls and highlights how this research addressed the previously mentioned research objectives and the research questions and how they were addressed conclusively. Table 6.1 below summarises how the objectives and questions were addressed and how a conclusion of each was attained. The conclusion column is further expounded on in the subtitles that follow.

Table 6.1 - Research objectives, questions and method:

Objective / Question	Method	Conclusion
To determine the extent to which Cape Town can satisfy Chinese tourists in terms of smart city technology and services.	Interviews with tourism stakeholders and data collection.	Analysis of data collected through findings and interpretations.
To establish and make recommendations to smart city stakeholders on how a smart destination that specifically caters to the Chinese market can be achieved.	Systematic literature review	Analysis of literature and findings led to recommendation of Cape Town Smart Destination Development Framework.
What smart city initiatives exist in Cape Town?	Interviews with the City of Cape Town (CoCT), tour operators, etc.	Analysis of findings and literature review.
How have other smart cities implemented internet of things (IoT) to bring about smart city status?	Documented smart city IoT initiatives in literature review.	Analysis of findings triangulated with literature review.
How can Cape Town improve its focus on Chinese tourists using smart technologies?	Data collected from tourism stakeholders on Chinese touristic experience through interviews.	Suggestions of how Cape Town can improve its service to Chinese tourists through the implementation of smart devices and through the Cape Town Smart Destination Development Framework.

6.2 The extent to which Cape Town can satisfy Chinese tourists using technology and services

The study revealed that the Chinese have different preferences and consumption patterns compared to several other markets. Further investigation is warranted to determine how Cape Town as a smart destination could source more revenue from the attracted Chinese tourists to benefit from their lucrative international tourism spend. The study focused on Chinese tourists, a fast-growing market in the world and a critical emerging, yet under-focused market in South African tourism. Digital technologies and digital disruption are inevitably proliferating into tourism experiential services. The study specifically proposes the design of consolidated digital touristic services. It further echoes the undercurrent body of knowledge that suggests that Cape Town implements best practices to become a smart, safe and sustainable city.

Cape Town has implemented smart city initiatives through several projects and has acknowledged tourism as a strategic technology focus area. However, its focus has been mainly on broadband and infrastructure roll-out and skills development with lesser efforts in the application of digital trends in tourism. Although smart technologies are anchored by integrated and reliable broadband infrastructure, WCPG's broadband projects must concurrently deliver smart city services and educate citizens on usage and importance of digital services to revive declining government services.

6.3   Cape Town's current state as a smart city (destination)

CoCT's primary focus is exhorted on services for citizens, underemphasizing tourism and new emerging markets. Although CoCT has been keeping up their connectivity objectives, the tourism sector suggests that connectivity is an area that warrants more effort, particularly in the preserved touristic attraction centres. The preservation rights of the ecological environment seem to be hindering connectivity in heritage areas. This, in turn, will restrict the use of IoT devices in these areas. However, the development of 5G can provide solutions to the connectivity and easy access to information without degrading the cultural value of the heritage areas. The city is committed to encouraging the growth and development of the economy through the investment and support of ICT. The city's primary focus is to provide access to ICT for its citizens and business, and in so doing provide opportunities for economic growth. These findings suggest that Cape Town can contribute to the Smart Africa initiative.

There are no claims that classify Cape Town as a smart destination nor smart tourism destination, although there are efforts of incorporating innovation and digital transformation in strategic development. Achieving a smart city will attain a smart destination state through interactions and synergies of value co-creation for sustainable tourism. From the academic findings, Cape Town possesses the elements that construct a smart city through integrating technology and ecology in the city (Mhangara et al., 2017, Stelzner, 2015), thus, the development of smart city and smart tourism experience is contiguous. Ecological smart destinations create a tech-enabled environment for residents and tourists to co-exist in a value co-creation process in all aspects of living. Smart governance forces city officials to reconstruct and improve service delivery models and processes with a more user-centric approach.

6.4   Smart City IoT initiatives in smart cities in the world

The literature review discussed the smart city IoT initiatives in successful smart cities in various countries, BRICS countries and ultimately in Africa. Although several cities provided IoT initiatives and examples, the Smart Africa Alliance principles tended to be more applicable to Cape Town.

Through capital investment, pragmatic government policies and support, the city continues to develop and implement smart city initiatives with distinct objectives aligned to the Smart Africa Alliance principles and the UN's socio-economic development agenda for Africa. Efficient implementation of smart initiatives optimizes value creation and social welfare through the support for clean technologies and social development programmes. The creation of high urban value promotes socio-technical system solutions for Cape Town, such as crowd investment schemes from smart city investors.

The study findings suggest an omnichannel relationship between service providers on one platform with multi-language support will leverage customer experiences through consolidated services. Therefore, the model needs to be organized, coordinated and controlled by a "smart tourism centre" established by groups of experts from the tourism sector, university researchers, engineers, municipalities, and the government. The development of a smart tourism destination requires leadership, vision, coordination, strategic leadership, and constant re-evaluation.

6.5   Cape Town Smart Destination Development Framework

The value proposition of the study is on smart cities and the socio-economic development of Cape Town and South Africa. The insights drawn from the research impelled the development of a conceptual framework that addresses the research aim. The various categories that emerged during the data collection and thematic analysis of this research were triangulated with touristic dimensions that emerged in the literature review and guided the corollary of the Cape Town Smart Destination Development Framework. The framework epitomises the possible smart destination tenets that present an exigency for IoT based solutions. The framework can be implemented as a theoretical guide for an independent mobile application model for tourism in Cape Town that is multilingual, including Mandarin. The application framework seeks to build more trust in hospitality, promote support from government to private entities, increase security in attraction centres, and provide real-time support and assistance. The framework integrates various stakeholders in service provision, offering tourism information about public and private transport, traffic, tours, food, police, security services and additionally offering ticketing services for hotels, transport, banking, restaurant guides and reviews. Table 6.2 below shows an overview of the Cape Town Smart Destination Development Framework and how it can be applied at a city planning level and consequently throughout the travelling journey of tourists.

Table 6.2: Cape Town Smart Destination Development Framework

Smart City Foundation Planning	Smart Destination Dimensions	Phases		
		Before	During	After
1. Broadband infrastructure – Accessibility coverage and implementation 2. Business enabling environment 3. Digital Connectivity 4. Digital economic empowerment 5. Digital payment Platforms 6. Investment opportunities - local support, local booking websites 7. Digital open government 8. Fibre Rollout projects 9. Financial Support 10. Private-public collaboration 11. Language learning and support 12. Legal restrictions, Legislation 13. Local development 14. Technology integration with Chinese marketing mediums, channels, social media, 15. Enhanced Exotic attractions 16. Flexible Tour Products and Pricing strategies	**Transportation**	1. Planning: Location and navigation (Distance and times), Digital brochures 2. Recommendation System: Packages and Offers 3. Time planning and itinerary options, Digital Booking, Check-in services 4. Website language support	1. Real-time updates 2. Personalised offerings 3. Personalised Menus 4. Suggestion of alternative 5. Universal (all modes) e-Card 6. Security and Safety	1. Feedback Loop 2. Promotional Updates 3. Rating and recommendation feedback 4.Luggage Finder (tracker)
	Accommodation	1. Planning: Location and navigation (Distance and times), Room options, Flexible pricing and Surrounding Events 2. Time planning and itinerary options, Digital 3. Virtual tours 4.Health and safety info	1. Personalised messages 2. Personalised customer Preference 3. Personalised customer service 4. Connected room 5.Room services	1. Feedback and reviews 2. Promotional Offers 3. Post service communication 4. Recommendation service
	Gastronomic	Information (Special Dietary options, Flexible Menus, Food Ingredients)	1. Integrated service 2. Real-time Information: Customer Awareness and Social Context	1. Promotions 2.Feedback and recommendations
	Attraction	1. Recommendation System 2. Information availability 3. Virtual tours	1. Digital guide Tours/Maps 2. Real-time Information 3. Information on surroundings	1. Sharing services 2. Live sharing 3. News Update 4. Recommendation System
	Ancillaries	1.Iterinary planning 2.Safety and Health information	1. Navigation 2. General Information 3. Location-based Information (GPS) 4. Weather update	1.Service feedback and recommendations

The various service solutions are centred on digital technologies that include 5G Telecommunication, QR codes, payment apps (e.g. WeChat Pay), Chinese search platforms, virtual reality, GPS, Radio-frequency Identification (RFID), and sensors in Wireless Sensor Network (WSN) environments.

The challenges in tourism that the Western Cape Government (2018a) sets to address align with the identified aspects that Cape Town as smart destination circumvents. These issues in summary include:

- Awareness - marketing in key source markets that can grow rapidly. Marketing and services that assist small hotels in catering for group tours.
- Accessibility – developing more accessibility to and within the Western Cape through lenient visa regulations and processing.
- Attractiveness – the study and findings identify Cape Town's attractiveness as possessing great potential, particularly its cultural and heritage centres that emphasise its unique history.
- Seasonality – sustainable tourism must operate independently from seasons, promoting winter tourism to supplement peak tourism times.

The smart city initiatives explicitly benefit citizens through the provision of open data portals to every aspect of government to citizen services. Smart services can be successful if the government works in partnership with ICT vendors in the private sector, effectively in the liberation of proprietary ecosystems. Communication and sharing of data are crucial between citizens, tourists, physical objects, government and agents. Cape Town must establish more structures of seamless data sharing by coordinating different smart initiatives across different departments.

6.6   Contributions

The research intent was to shed more light on smart destinations and how Cape Town can be developed into a smart destination that caters for Chinese tourists. Through explorative research the following theoretical, methodological and practical contributions emanated from the research:

- **Theoretical** - The research elaborates further on the understanding of smart cities, innovation and their contribution to tourism. Smart technologies are outlined as tools that enhance socio-economic development in tourism. The underlying literature built a eulogy of Chinese tourism and smart cities, laying a foundation of the Cape Town Smart Destination Development Framework. The theoretical framework applied the ANT framework which identifies actors that associate in a network and form dependencies

amongst each other. This was applied in the context of smart tourism and led to the emergence of personalised and digital experiences in tourism.

The research dwells on an under focused area in the annals of African tourism. Vast literature was discovered in western journals that dwell on the Asian market, with almost no literature found in African journals seeking knowledge on precisely Chinese tourists. Although Africa has begun consortiums, partnerships and organisations that focus on the development of smart cities, this research stretches this ideology further with a focus in developing future tourism. In technology and innovation, the research exposed the key tenants of developing smart destinations (cities) in Africa by aligning the theoretical underpinnings of smart cities being developed around the world with the Smart Africa Alliance principles and UN's SDGs. Consequently, the findings from the data collection unearthed the areas of focus for sustainable cities and communities and components of smart cities that can be developed to provide solutions for problems in Cape Town and other cities in developing countries.

- **Methodological -** The methodological approach applied the ANT socio-technical theory by mapping the semiotic relationships that exists between actors across different networks. It built more understanding on the socio-technical issues in multifaceted and interdisciplinary networks. The ANT does not prove a hypothesis but rather adopts a constructivist approach in the semiotic networks by explaining how different actors negotiate with others to create value. Likewise, the research adopted a two phased data gathering process across IT and tourism disciplinaries collecting data from the City of Cape Town and tourism stakeholders respectively. A triangulation of the interdisciplinary data gathered assisted in identifying the key components crucial to realising the research objectives. The research established a possible approach to data gathering and analysis for smart destination research, which can be applied in analysing smart destinations in developing countries.

- **Practical** - The research ultimately yielded the Cape Town Smart Destination Development Framework from expounding on the goals of the South African Department of Tourism by focusing on emerging tourism niche markets and how smart technologies can enhance tourism experience. The Cape Town Smart Destination Development Framework provides a meticulous structure that guides how digital tourism can be enhanced. The provincial government, city planners, tourism stakeholders and technology hubs can be guided by the identified key factors that influence the development of smart destinations. Critical factors that emerged in Cape Town's tourism include the need to focus on natural attractions and establishing smart tourism boards that plan on innovation development and implementation. The provincial government was identified as a key actor in smart cities, smart destination

policy making, and smart destination strategies that support entrepreneurial growth and management. The novelty of the research lies in improving city life of citizens and tourists and developing sustainability and diversity in Cape Town and across South Africa.

6.7   Limitations and future research

The interviewees did not represent all key stakeholders from the tourism sector in Cape Town as reaching Chinese tourists was a challenge due to the 2020 pandemic that halted tourism. Chinese tourists would have provided more insights into the study's focus. Therefore, the sample was not necessarily a full representation of the larger population of tourism stakeholders.

The Cape Town Smart Destination Development Framework can be developed further to cater for other tourist source markets particularly those that are not Eurocentric. Further research can explore the technicalities of integrating the identified developmental factors of the Cape Town Smart Destination Development Framework to the existing structures of technology and services. Other areas of interest for research include the legislative concerns that have emerged in the study concerning visa regulations and preservation of natural tourist attractions that are impediments to setting up broadband infrastructures. Future research can reveal how these issues could be addressed extensively at a governance level. The sharing of open data between organizations acting as partners in a smart destination poses privacy and security concerns. Future studies should investigate the nature and factors that explore the risks in data sharing within smart cities/destinations that are created by open government platforms. The findings were highly inclined to the effects of COVID-19 on tourism making issues such as health and safety it a current and

6.8   Conclusion

The value of this research lies in addressing the research title's quest to develop Cape Town as a smart destination tailored for Chinese tourists. The research benefits of the envisaged smart destination are unobtrusive to Chinese tourists but are ultimate to Cape Town's citizens and South Africa.

Public and private partnerships in the tourism sector would present opportunities for business to solve modern problems through innovation and new, smart business models. Sharing of data and e-collaboration between service providers in the tourism supply chain improves supply chain performance but poses security risks and privacy concerns for customer data. The perpetual increase in demand and dependency on the technology of upcoming younger

generations envisages embracing the adoption of artificial intelligence, robots and automated services in tourism service delivery. Transport and booking services have been transformed by disruptive technologies from multinational corporations raising concerns on service delivery and repatriation of revenues. The government needs to support small businesses in smart tourism in Cape Town to articulate the transition from e-tourism to 4IR experiential tourism, through digital transformation in the tourism industry.

The smart destination ideology is an underdeveloped area of research in the annals of African tourism. The systematic distribution of shared usage of touristic data for value creation is still in its infancy. Smart tourism initiatives aim to construct sustainable smart tourism ecosystems. This study proposes achieving sustainable digital tourism through a framework for conceptualising and transforming tourism. This can be achieved through social and structural innovations that are reliant upon systematic links between public, private and non-profit entities through development and stimulus policy initiatives. The study conceptualises smartness in ICT, achieved through leadership, innovation, and social capital and human capital. Although many technologies are driving towards the development of smart tourism, the complex tenets of the multifactor structure of smart tourism render it an arbitrary state.

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APPENDICES

Appendix A

How does the City of Cape is positioning ICT at the centre of its socio-economic development agenda?

	Comment	Key Words	Themes	Categories
R1	The City has been supporting the growth and development of the ICT sector in Cape Town with the view of impacting poverty alleviation as well as creating prosperity and productivity through the provision of an enabling environment for the ICT sector to thrive in Cape Town. This intervention in the form of provision of an enabling environment has led to start-ups/SMEs/Entrepreneurs/venture capitalist/incubation platforms/finance and services related companies setting up and operating from Cape Town.	prosperity and productivity enabling environment, Start-ups/SMEs/Entrepreneurs/venture capitalist/incubation platforms/finance and services	Support, innovation, Finance	Financial Support
R2	The Cape Access initiative offers computers and internet access at e-Centres located in communities with limited access to ICT. The CoCT continues to invest in IT infrastructure, and by 2019 the city has installed 848km of fibre-optic cable and over the next 2 years, the city will devote R1.98 billion on fibre infrastructure.	access e-Centres in communities. Invest R1.98 billion on fibre infrastructure	Fibre infrastructure investments	Fibre Rollout projects
R3	Through research and benchmarking the Western Cape Government (WCG) discovered that a positive relationship exists between gross domestic product (GDP) growth and internet adoption and therefore designed a Digital Opportunities Implementation Framework based on the Broadband Strategic Framework. This aims to curb the key challenges facing the Western Cape region, such as a growing informal sector and rising youth unemployment, exacerbated by the prolonged downturn in the South African economy.	gross domestic product (GDP) growth and internet adoption Digital Opportunities Implementation Framework Broadband Strategic Framework challenges	adoption Digital Opportunities Implementation Framework Broadband Strategic Framework	Digital Based Frameworks
R4	The Digital Skills Development initiative is driven via the Digital Marketing Implementation policy with the main focus on job creation and economic development. Through job creation and promoting skills development, it seeks to stimulate innovation and growth. In so doing, it seeks to increase access to new opportunities and markets, while making the environment more competitive by driving productivity.	adoption Digital Opportunities Implementation Framework Broadband Strategic Framework	Digital Frameworks	Digital Based Frameworks

Appendix B

How is the CoCT's efforts to improving access to ICT especially broadband?

	Comment	Key Words	Themes	Categories
R1	The CoCT has been enabling the environment through the provision of over 848km of broadband infrastructure in Cape Town that will be helping to reduce the costs of telecommunication in the near future.	broadband infrastructure costs reduction future	Broadband costs.	Broadband affordability
R2	The SmartCape initiative is designed to help residents access the internet, free of charge at 105 community libraries. In conjunction with a private company, Liquid Telecom SA, the Western Cape Government will expand the number of free Wi-Fi hotspots at government buildings from 178 to 1 600 in 2019. This is a R3 billion project to deliver broadband connectivity to government offices, libraries, schools and clinics.	Smart Cape Free Internet Wi-Fi Hotspots Offices, schools	Smart Cape Free Wi-Fi	Broadband accessibility.
R3	With its provincial Broadband Strategic Framework, the Western Cape is able to improve telecommunications and technological infrastructure across the provincial and local government spaces (via the Connected Government strategy)	Broadband strategic Framework, telecommunications Infrastructure	Broadband Framework	Broadband infrastructure
R4	The Department of Economic Development and Tourism (DEDAT) is pushing for a more regional approach on the skills side, with strategies that drive the economy on a regional basis via local economic development strategies. Additionally, there is a need to learn and understand the demand challenges and blockages facing job creation to create more opportunities.	DEDAT economic development strategies, job creation	Skills development, job creation	Economic empowerment

Appendix C

How does the CoCT's improve accountability, efficiency and openness through ICT?

	Comment	Key Words	Themes	Categories
R1	The CoCT supports the ICT sector through financial and non-financial support of the ICT ecosystem – the CoCT supports the ICT sector through annual funding and non-funding collaboration with the various clusters in the ecosystem – including support to sector bodies like the Cape Innovation Technology Initiative (CITI). The CoCT has been providing broadband connectivity to City buildings, public buildings and will eventually be providing fibre connectivity to the private sector in order to reduce costs of telecommunication.	Cluster collaboration, Support Cape Innovation Technology Initiative Public buildings fibre connectivity	collaboration, Support fibre connectivity	Private – public collaboration
R2	Through the Digital Government Strategy, all provincial ICT initiatives should optimise and transform existing public services and create new public services for citizens through digital empowerment of residents and employees. In turn, the Digital Transformation Plan will be launched in	DGS Digital Transformation Plan e-learning e-Health, digital empowerment of residents and employees	Digital Transformation Plan empowerment of residents and employees	Digital economic empowerment

	2019 via workshops and consultations with other departments, citizens, academia, businesses as well as local and national government. One example is the e-Learning initiative where an e-portal features educational videos, apps, eBooks, courses, etc. Another project known as eHealth uses ICT to improve and facilitate public healthcare by enabling better planning, implementation and the monitoring of service delivery to patients			
R3	The broadband roll-out started in DEDAT out of the need for solutions to the financial crisis a number of years ago. The strategy was to address the financial crisis through ICT and in so doing DEDAT created a plan to invest in infrastructure. This resulted in the establishment of a network to remote areas with fibre capacity for public access to Wi-Fi.	DEDAT infrastructure and fibre capacity investment public Wi-Fi.	Fibre capacity rollout	Broadband accessibility.
R4	DEDAT's main focus is on the citizen and business digital adoption, prioritising their access to broadband infrastructure, information and opportunities thus broadening their participation in the economy (via the Connected Citizen strategy).	Digital adoption focus citizen access to broadband the Connected Citizen	Digital adoption Connected Citizen	Broadband accessibility.

Appendix D

How does the CoCT leverage ICT to promote sustainable development?

Comment		Key Words	Themes	Categories
R1	The CoCT collaborates with Province, CITI and the private sector stakeholders in regard to supporting skills development in the ICT sector that enables companies to source appropriately skilled young people. The CoCT has been collaborating with the private sector through the above-outlined initiatives with key stakeholders like Province, CITI, Wesgro and the private sector. The support of the ICT sector ultimately results in job creation, productivity and competitiveness through skills training, enterprise development and incubation, marketing as well as the support of industry events.	Skills collaboration with the private sector, Wesgro, ICT sector, job creation, productivity, marketing	Private sector collaboration	Public-private partnerships
R2	There is a focus on red-tape reduction and becoming a business-friendly city. Private sector development is supported through agencies like Wesgro which is the tourism, billion investment over 10 years.	business-friendly city Wesgro	Business Support	Business enabling environment
R3	Broadband diffusion focuses on Connected Leadership, Connected Citizens and Connected Business aiming to harness leadership and vision across all sectors of society.	Broadband diffusion, connected Leadership, Connected Citizens and Connected Business.	Business and Citizen participation	Digital leadership
R4	The WCG accepts that the internet provides citizens and businesses with access to options and possibilities through information, services, resources, and opportunities. It strives to increase access to new opportunities and markets, by	internet access opportunities markets, businesses in the local, national and international space.	Internet, opportunities	Internet access

	generating novel service-oriented businesses in the local, national and international space.			

Appendix E

How does the CoCT leverage ICT to promote sustainable development?

Comment		Key Words	Themes	Categories
R1	The CoCT has also been supporting enterprise development programs that target small businesses in the ICT ecosystem including the women in business programs (these programs target women in business with the aim of helping them to grow their businesses – this involves hands-on facilitated workshops, Inspirational and practical discussions, networking opportunities, small group mentoring, introduction to business and digital tools). The CoCT also helps in collaboration with key stakeholders like Wesgro and CITI to market Cape Town as a competitive destination and ICT hub for the ICT sector in Africa.	women in business programs helping them to grow their businesses workshops, Inspirational and practical discussions, networking opportunities, small group mentoring, introduction to business and digital tools. collaboration with key stakeholders.	Women in business, programs, support, digital tools, collaboration	Women business support
R2	The Western Cape Broadband Initiative proposes that by 2030, every citizen will have access to affordable high-speed broadband infrastructure and services. Along with this, they will have the necessary skills to be able to effectively utilise this infrastructure and is actively using broadband in their day to day lives. The Cape Access project provides less privileged and rural communities access to computers, cell phones and the internet, as well as the various services and applications associated with them.	Broadband access by 2030, affordable high-speed broadband skills to effectively utilise infrastructure using broadband daily. The Cape Access project provides less privileged and rural communities access to computers, cell phones and the internet.	Affordable broadband access for all	Broadband accessibility
R3	The WCG has recognised broadband as key to the future growth of the Western Cape. The Provincial Strategic Plan states categorically that the provincial government has committed to encouraging the growth and development of the provincial economy through the support of broadband usage.	The Provincial Strategic Plan, growth and development of the provincial economy through the support of broadband usage.	Growth through broadband usage.	Broadband accessibility and support.
R4	Main programs include the Cape IT Initiative, Wesgro, IP regulation - Coordination and Management in the Regulatory environment, and the development of models for government (as appropriate).	Cape IT Initiative, Wesgro, IP regulation - Coordination and Management in the Regulatory environment, and the models for government	Programs and government models	Support programs and initiatives

Appendix F

Do you believe that attracting Chinese tourists present a unique challenge, over tourists from other countries?

	Comment	Key Words	Themes	Categories
R1	Yes, Bigger touring companies – Thomsons they come in big groups/organized – type of accommodation. Have to have SA guide (legislation) otherwise SA guides lose out. Language is a barrier. Younger more exposed to English but not elderly.	SA guide (legislation), otherwise SA guides lose out. Language is a barrier English especially to elderly.	Legislation Local guides Language	Legislation Local support Language Barrier
R2	Very lucrative market but has barriers. Language is a barrier. Distance from China to SA and WC is a long-haul destination market but WC is a unique destination. Stigma, Challenge is to accept Chinese as a perceived source of the Covid-19 virus, can be done through community readiness CT is not cheap but good value as it attracts the high end of the market. Select few of tourists. They are a good market but not the key market	Language is a barrier, Distance from China, SA is a long-haul destination market, WC is a unique destination Stigma - perceived source of the Covid-19 virus CT is not cheap but good value as it attracts the high end of the market	Language Long haul destination Safety Cost High end market	Language barrier Distance Safety concerns Prestigious destination
R3	Yes, Language barrier which remains a challenge. Ways of promotion SA and Cape Town are still perceived as an exotic destination. Barriers to entry – flights and relevant product that can assist in our Chinese tourists to feel welcome. Way that business is structured – there are certain rules and regulations that are required for tourism businesses in South Africa that are costly, that prevents additional promotion or information from being shared. Safety and Security issues- not only financial, but personal safety, data protection. Flexibility in targeting a new segment from the Chinese visitor. We have been targeting the same profile of customer year after year. We have to target on the relevant platforms such as Alibaba, WeChat etc to engage the Chinese audience. Lack of engagement targeting the corporate and incentive market. That should be a focus to bring the decision makers and influencers here to ensure that marketing is extended.	Language barrier which remains a challenge SA and Cape Town perceived as an exotic destination. Flights and relevant. rules and regulations that prevents additional promotion or information. Safety and Security issues- but personal safety, data protection. Flexibility in targeting a new segment from the Chinese visitor. We have to target on the relevant platforms such as Alibaba, WeChat etc to engage the Chinese audience, engagement targeting the corporate and incentive market.	Language barrier Flights Exotic destination Rules and regulations Safety Niche marketing Marketing platforms	Language barrier Distance Prestigious destination Legislation Safety Marketing barriers
R4	Geographic distance is a barrier. The distance between Cape Town and China it's about 10000km. There is no direct flight with between Beijing and Cape Town, the flights connect, and arrival times are often odd. They have hard earned money only accumulated at an old age but the old cannot travel long distances. There are safety concerns arising from social media. Business are having a difficult at the present time due to the Covid-19 Health and safety concerns.	Geographic distance, no direct flight, old age, safety concerns arising from social media, Health and safety concerns.	Distance, Old age Safety Health	Distance Market Demographics Safety Concerns
R5	Language barrier – little English. Frustrating/tedious process dealing with Chinese tourists. Even the younger people don't really speak as much English so you'll find young people come in as a group very often out of maybe four or five of them only one person speaks English and the others	Language barrier, Distance from, South Africa is a high value destination, not cheap, good value, few tour guides speak Chinese, price conscious.	Language barrier, Distance high value destination, not cheap, good value,	Language barrier Distance Prestigious destination

	don't at all. Distance from China makes it a long-haul destination very far, about 20-hour journey. Other challenge we have come to realize is that South Africa is a high value destination for China. We are not cheap compared to rest of Asia. We are, however, still good value. Big, organized groups. Very few tour guides speak Chinese so they will come in big, organized groups, though it's not everyone who is going to prefer these big tour groups especially post Covid-19. For the Chinese market, how are we going to bridge the gap to actually get a Chinese speaking guide for about two people that we need to serve? Okay, one thing I can tell you about Chinese people even though they seem to have lots of money to spend, they are extremely price conscious.			
R6	Yes, in fact an overwhelming Yes. If you have been in a place like China or Beijing or Shanghai, but for example, it's entirely paperless society, there's no money in your wallet, everything is digital, and it's done over a mobile phone. You know when I try, even if I want to buy a little chocolate costing 50 cents on paper. Everything is conveniently electronic, that it's impossible for me to compare yourself to a Chinese. So, while you go to the shop or you get to the hotel or you have like to take out your ID do all these things over there, it's done conveniently on a mobile device. A Chinese can't go without a mobile phone the same way that you would. So, right at the beginning, from acquiring a visitor in the tourism. When they do, they search online. Following the tourism continuum. It starts with people, dreaming about a destination. Then, the next step is, they do the research, and then they do the purchase, that entire process is digital. They must be able to have digital, rich information at their disposal in their language of choice, on their platforms to make the experience seamless. So that's before they even visit the destination. So yes, I think it's a unique challenge. For example, you don't find contactless payments, like you would in China in destination, like American source market, or the UK, they still very much fall behind when it comes to that. So, there's a lot of aspects there in terms of the experience, the digital experience, that requires for destinations like South Africa to be China ready.	paperless society, electronic, that it's impossible for me to compare yourself to a Chinese, the tourism continuum process is digital. challenge. For example, you don't find contactless payments, the digital experience, China ready.	Paperless, electronic, Digital tourism continuum	Digital lifestyle Digital tourism
R7	Yes, I must just say that I'm not super experienced in the Chinese market. I know a little bit about it. I think the obvious aspects in attracting Chinese tourists would be around language to start up with. I think the biggest obstacle, has been, and this is not unique to China but it's some believe it's played a role is now our visa system this applies even to America. Additional requirements and all the documentation with regards to traveling with children. An important aspect is flights,	Language; VISA and Flights	Visa Regulations and flights	Visa Regulations and Accessibility

	we do not have direct flights for the international markets. More accessible flights and possibly even foldable, or relatively affordable. The perception of Cape Town, South Africa from a safety and security point of view from everything they read about or to TV kind of thing with experience their mindset.			

Appendix G

How do you propose Cape Town could do better at attracting Chinese tourists?

	Comment	Key Words	Themes	Categories
R1	Mostly via Airports (improve communication – dedicated notifications - customised/dedicated arrival for Chinese market – why not Passenger liners	Communication, customised, notifications, Passenger liners	Customised services Notification	Personalised services
R2	Closed economy to a large degree. WeTransfer/UnionPay don't support Visa and Mastercard. Financial platforms. Travel in groups due to language and safety and security. South African tours are not geared for that (individual). Circulation of money is locked into Chinese tour operators, restaurants, Chinese tours. Real obstacle. Australians learnt that listen and has students learning Mandarin. Youth market is a great potential as they have "social clubs" that plan and assign tasks themselves in an organized fashion. WeChat Saving conscious nation. They travel to Europe primarily for prestige, status. We don't have luxury apparel. Then wildlife, other iconic attractions. They travel to Europe to iconic shops buy original they want to buy experience and prestigious.	Closed economy WeTransfer/UnionPay don't support Visa and Mastercard. Financial platforms. language and safety and security. No individual tours. Circulation of money is locked into Chinese tour operators, restaurants, Chinese tours. Real obstacle. Youth market is a great potential as. Then wildlife, other iconic attractions. They travel to Europe to iconic shops buy original they want to buy experience and prestigious.	Financial restrictions Legislation Safety Niche markets Wildlife	Legislation Safety Local Support Exotic attractions
R3	By addressing the language barrier if possible. An intensive marketing strategy to niche markets in China such as youth and middle-income earners.	marketing strategy to niche markets	Niche Marketing	Niche Marketing
R4	There are about 2 million Chinese in Johannesburg and maybe 1.8 million in Cape Town. They can be used to market South Africa and Cape Town. In the year 2005 Chinese they had little knowledge on South Africa. But China has been hosting the tourism expos. In the year 2017, it was in Shanghai and Hong Kong. In the following year in 2018 It was a Guang Zhou and another one. In the tourism expo about 73 countries attend. The local South African Chinese, South African government also attend. This offers a platform for Chinese to ask specific questions and get instant responses. But the downside is the negative publicity they have a very powerful	1.8 million in Cape Town. China tourism Expos, WeChat media, much faster than Facebook.	Social media marketing Tourism expos	Marketing channels

	media, mainly WeChat with no advertisement and untagged data, unlike if you go to Facebook, you see many advertisements and things to related to you. Get up. is also popular and safe because its protected by the Chinese government. Is there chat function like marketplace on Facebook on WeChat? They have we have friends, they agree, and you can put you can post whatever you have there. For example, if I'm selling something, I can share with all my friends and it will be spread to their friends. The way it spreads overnight is much faster than Facebook. Do you use WeChat to communicate with Chinese from South Africa? Yes.			
R5	Seem to have lots of money yet they are price conscious – bargain culture-look at better costing models to attract. Outdoor-based packages, shark cage, paragliding. They do their research beforehand. Arrange their own itineraries upfront especially for young and they know what to do when they arrive. It becomes difficult when they arrive to communicate when they have their own little itinerary. Love safaris (especially older client).	price conscious – costing models to attract. Outdoor packages, arrange their own itineraries upfront especially for young and. Love safaris (especially older client).	Costing, outdoor packages Youth and Elderly	Tour Products and Pricing strategies
R6	South Africa Tourism last year negotiated with WeChat to have a number of initiatives, one of which is WeChat pay so the Chinese people can use the WeChat pay in South Africa for cross border payments. We also wanted them to have that experience that they have on the WeChat mini programs. This is a super app than WhatsApp, WhatsApp is just like 10% of what WeChat is. You can open it will give you any information about a geolocation destination. You can point it anyway and it give you information about a place if it's an attraction. A significant part of that is to have the digital experience for them. So one of the things that the (Cape Town) city has been doing and cities in South Africa have been doing to work towards that is the fibre optic project is the layout fibre to make it more digital. For example, the few free data given by hotels will only last a few seconds for Chinese tourists. Yes. So, even though I've been working in the CoCT, originally from Cape Town. I like to speak on behalf of South Africa and all South African cities, including Cape Town, and it's no different. I think the first thing that Cape Town, and the rest of the citizens of Africa have to do is become China ready and understand what it is to be China ready.	WeChat pay cross border payments. WeChat mini programs, geolocation destination, digital experience for them, Layout fibre to make it more digital. few free data, become China ready, and understand China ready.	Digital Payment platforms, Geolocation services, fibre optic	Digital payment platforms, Geolocation services, telecommunications infrastructure
R7	Having a much easier visa system or as they may be no visas for visiting other countries, direct flights and some sort of	Safety – perceptions around security and crime.	Safety, Accessibility	Safety, Accessibility

	marketing South African tourism to promote SA in China. I do not know how to overcome this, but it becomes the sort of a barrier; the people's perceptions around the safety and security as what they sees on TV is a distorted view of reality, it's sometimes taken out of context. As far as crime and safety security is concerned, it is obviously a national problem in Cape Town If this hurdle or barrier was lifted it would open the floodgates in SA. to turn Africa because I do think it's when you think about your own feelings about a particular destination. just to reiterate, accessible flights. Yes, direct flights critical to increase numbers in violence corrections. A there's an initiative in Cape Town to try and bring direct flights into Cape Town. normally are very influenced by lower price than five-star hotels that Emirates does have multiple rights in the market as public complicated. As an entrepreneur do a traveling for very low rates. In low season large hotels are able to low yielding business. I mean sort of low yielding business and as a few intervals that, that it's usually larger tells with lots of rooms that try to focus on that market because they've got the capacity to accommodate some of the case and no 8000 rooms for example that you put 50 rooms at a lower rate, it brings your average down slightly but 60 rooms and you've got 15 and lower rates, Stay on a tour de force cross contact with other Chinese people that had indicated that ideal in the upper end of the market wherever luxury and top end, but I haven't experienced with any of that coming to fruition yet. So, I There is a high-top end market of Chinese tourists that do fall into the same category that we've just described a few minutes ago. But it's not something that I've specifically pursued first-hand. meet the requirements Obviously due to live demand, then I chose a much more negotiable. And we be able to meet the requirements from pricing point of view as well. Large hotels have the capacity as well because they travel in groups.	Accessible and direct flights to Cape Town. Rates - Influenced by lower pricing for hotels. Travel in groups. Known for low-yielding business.		

Appendix H

Do you believe that technology has a role to play in attracting Chinese tourists is so, Why?

	Comment	Key Words	Themes	Categories
R1	Absolutely – they travel with their devices – support it with infrastructure. Remote areas without signal. Wildlife/safaris. Must support their mobile phones. Reliable infrastructure.	Remote areas, Wildlife/safaris, infrastructure.	Wireless Signal, remote areas	Telecommunic ations infrastructure
R2	Most definitely – difficult to reach tourists otherwise. Social media vs word of mouth (the same isn't it?). Marketing is still by word of mouth that is spread via different medium and the common medium now is social media. Prior to visiting tourists can do a virtual tour which give you a clearer image of the accommodation than a picture. Infrastructure. different cultures, are they welcome (they want to know), quality of service. Naspers and Tencent role to play. 5G definite opportunity. Embedded chip into baggage developed in China rolled out in their airports	Social media vs word of mouth, Marketing different medium, social media, virtual tour, accommodation, Infrastructure, different cultures, Naspers and Tencent role, 5G opportunity, Embedded chip airports	Marketing medium 5G social media, virtual tour	Marketing medium social media, virtual tour 5G Telecommunic ation
R3	Yes. The Chinese tourists are very tech-savvy hence technology should give many opportunities to reach the Chinese tourists. There is need to identify how exactly to reach them, perhaps through their own channels and applications or designing technologies similar to theirs.	tech-savvy, hence technology should give many opportunities to reach the Chinese tourists. channels and applications	Marketing, applications.	Marketing channels
R4	Well, I think this question is very important, and maybe it's one of the questions the gentlemen would like to find out, because you he is the IT student. I have to say it's not as much as you think. In terms of connectivity China is now rolling out 5G we (Cape Town) are still struggling with 4G. In terms of payments China uses WeChat for almost everything, even loyalty or promotions are sent via WeChat. To shop in South Africa using snap scan or you need to have a South African bank account. In health South Africa has a lot of paperwork which delays speed of being attended whereas in China it's all paperless. For every 100 patients a SA doctor attends a Chinese can attend 3000-5000 patients.	5G, uses WeChat loyalty or promotions are sent via WeChat, China it's all paperless.	5G, Social media, electronic	5G Telecommunic ation Social media, Digitalisation
R5	Huge. Walking tours with audio – this is not big in SA but available in other countries. Online material/content will assist with assist with communication and translation because they are tech-savvy. Communication is a problem because of accent as, it would be better if there was an app that speaks in a language that you understand.	Huge. Walking tours with audio, Online material/content translation because they are tech-savvy, communication, app language.	Audio tour guides, language barrier, translation	Digital tour guides Chinese language support

R6	So, what happens with attractions. like even myself, if I want to go like for example, in as many times I wanted to stop over in Bangkok and go to the heritage site or anywhere else for that matter or when I go back to New York I just go to Google Maps and I look at what's there but attractions like table mountain, Kirstenbosch Botanical Garden and Waterfront all of them, they could they could make better use of technology, without the Google Maps and Facebook because Google doesn't exist in China, and Facebook doesn't exist. So, what they can do is they can have our own experience before people even come to the destination people can do their research and experience what the place might be like. Because the whole concept of traveling starts before you go, you think about it, while you actually traveling, you're not that exciting until afterwards when you're a reminiscing about it, you know, so that's normal for any human being, regardless of whether you are Chinese, Japanese or American. So if they can digitize these attractions, especially now, and have like a virtual experience that will encourage them to come and it will enhance their marketing exposure in that advance, because this is what you're competing against in China, everybody says if you don't have something in the rich new 3D friendly format, you are basically losing out. So virtual tours and things like that. Virtual tours etc.	without the Google Maps and Facebook, digitize these attractions, virtual experience, marketing virtual tours.	Different applications Digital Marketing	Legal restrictions Digital marketing
R7	I don't think that somebody to go to a particular destination because it's a smart city or choose a city because it would have the most technology or which destination would be considered a smart city or smart destination. but I think tourists specifically with deciding the destination based on the destination having a high or low level of technology. chose Chinese in particular, they chose to visit Cape Town, it was that everything would be, you know, to experience our culture to experience our culture. I do not think technology will be an influencer or big influencer in the decision making, but ability. In Israel, cannot be. One of the things that if an equation or Venus is actually not unique to Tel Aviv, but it's the first time that are sold that what I'm about to tell you is an all-electric scooter invites to electric scooters. So let's consider the impact technology had on me personally, is driving me going to the destination in fact I didn't even know about until I was there, but it gave me an appreciation and the same opportunity the story now. Many, many people have my experience, fun last affordable way to get around curriculars. to enhance the tourists. Again, as I have explained to you and using my own example, traveller returns home with positive sentiment it might pay somebody else to consider the destinations to ship	People don't necessarily get attracted to a smart city, but it does enhance their stay while they are here. Experience culture; people; scenery; wildlife, etc.		

	tomorrow to them actually coming here and adding top tourist numbers in just a minute.			

Appendix J

How could technology assist with aspects such as attractions?

Comment		Key Words	Themes	Categories
R1	They generally know what they want to visit before they arrive. Virtual videos. Weather forecasts (like Table Mountain and Robben Island).	know before they arrive. Virtual videos. Weather forecasts (like Table Mountain and Robben Island).	Self-preparation Digital marketing Table Mountain Robben Island resorts	Digital marketing Preparation
R2	Tourist expectation and Tourist behaviour. Enjoy their own cooking and own food types. Where can they find it? Tech should tell and show them. Will devices work here to assist in planning? Insurance conscious due to Covid-19. Reduce waiting queues at Table Mountain for instance. Save Chinese tourist time when visiting attractions as they do things in a hurry. Notifications.	Expectation, behaviour. Own food types. Tech should tell and show them, planning, Insurance, waiting queues at Table Mountain, Notifications.	Culture and food preservation, Delays	Hotel Amenities Time conservation
R3	By providing Chinese language and signage or some form of communication in attraction centres. Real time waiting times on ques in Table Mountain Robben Island as most review complaints are on waiting times and delays.	Chinese signage, Real time waiting times, Table complaints on waiting times	Communication, Language barrier, tour guiding Delays	Digital tour guide, Time conservation
R4	Network Coverage is very poor in some areas in Cape Town, at attraction centres like Cape Point due to environment Act. In wine lands there is a walk-in video tour that gives you information, history and background of many points but there is no Chinese language support in the language options although there are other languages. Like in Franschhoek its more complications when the language is in Xhosa or Afrikaans. More videos and more websites and applications are needed.	Network Coverage, Cape Point, environment Act, walk-in video tour - no Chinese language support more websites and applications are needed.	Cape Point Network Coverage, Legal restrictions Language barrier Digital marketing	Digital tour guide Telecoms infrastructure, Legal infrastructure
R5	App to provide a more accurate and reliable experience. Provide a personal experience and flexible individualised tours. More accurate detailed location services showing distances to and from common places	personal experience and flexible tours. location services	Personalised experiences, geolocation services	Digital experience, time conservation
R6	For example, in an attraction like Table Mountain or Kirsten Bosch or any other major action, or cape point, what would happen is, in a Chinese city at all these attractions, they will have what they call QR codes. Now some of you may be familiar with QR codes in your daily use. Others are just familiar in terms of the theory of QR codes, what it is,	QR codes, highest point in Table Mountain can also be geo located, language. enhance the experience scan, Groot Constantia union pay MasterCard and Visa, WeChat pay, up 300% to Chinese, a lot to electronic payments on WeChat pay.	QR codes WeChat Pay	Digital experience services International digital payments

	is like it's a very convenient little square way. That when point it for information on anything I just scan it, and everything is in my phone already. For example if I am at Table Mountain and I want to understand about Maclear's beacon, the highest point in Table Mountain there can be a QR code engraved in stone, so when Chinese customer or, or traveller will scan it, and they will know immediately all the information about Maclear's beacon. They can also be geo located, pointing the direction of going back to the Table Mountain, cable car. Same thing in Robben Island, all over in Madiba south, just imagine how rich the experience will be. If that experience for them is good that addresses their challenge because they have a difficult			
	challenge with language. They are one of the few countries in the world that do not speak English as much as other countries. So, if they can read from a translator, they can pick up everything in their own language. They don't need to have a translator (human) with them. And it will enhance the experience so significantly. For example, I don't know if you guys have had this experience but if you go into a restaurant. Let's just say in China, and you read off a menu, and the menu is in Chinese but there's a few pictures. Your choice will be very limited. You will just order what you think it is, limited to the pictures. However, if you are able to scan on that menu and immediately translate it into a language, you're comfortable with. You will order just about anything from that menu, and you would spend more. So up for example, Groot Constantia wine farm right. A lot of Chinese people don't carry cash because they're not used to carrying cash. So, the only way they can pay is through union pay or cash, but often they don't carry cash on them. So, what happened was union pay is the competitor of MasterCard and Visa, China doesn't have MasterCard and Visa. So, when Chinese people want to buy wine or anything, they had to first withdraw money, and then come back and pay. But since Groot Constantia introduced union pay payment acceptance. And if they had accepted WeChat pay it would have been even better. Their sales have gone on up 300% to Chinese people through the convenience of paying. So the CoCT can do a lot to allow businesses become China ready. By becoming China ready,			

	they can pick up on these things like electronic payments on WeChat pay and other things like that.			
R7	I mean, a lot of the things in these four points will also benefit our local population tremendously. And I think also, just to go back to some of what the city's done. It can be a direct and indirect attraction through creating positive sentiment, and terrorist free tune but I don't think it's going to be a driver in the decision making. In your experience is word of mouth report back with the people getting back to their homelands isn't critical for tourism. It's not something that I've done that I think we are able to measure. word of mouth Sure, but my feeling is yes, I mean, on LinkedIn. People salespeople. And, you know, you returned from a destination you've got photographs with amazing TV and YouTube, you know with passion and excitement about positive experiences, and it's definitely enabled influence on your friend or your family or your colleagues or whoever is listening, and it's definitely going to pique the interest, and possibly, I could end up being the next tourist, I agree.	Enhance their stay – book and not stand in long queues – pay – book in advance – high tech improving the user experience.		

Appendix K

How could technology assist with accommodation?

Comment		Key Words	Themes	Categories
R1	Different types --- very important and budget associated. Want to know beforehand visiting safaris want to know. where they are going to sleep. The duration of stay. Food very important love eating/mealtimes. Want to know the menu must be designed for the Chinese market, expect to eat what they eat at home. Adapt the menu to suit the Chinese tourist	budget associated. want to know Food eating/mealtimes, menu must be designed for Chinese	Food and Culture Offering	Food and Culture Offering
R2	Walk through via virtual tour technology that gives a better picture of accommodation prior to booking. Assist with bookings via apps	Walk through via virtual tour technology	Virtual tours	Digital tours
R3	Providing Chinese language on booking websites and applications. Live reviews to managers	Chinese language on booking websites and applications	Website language support	Website language support
R4	They have a site that provides a Chinese interface that communicates with	site that communicates with booking.com and SA Airways.	Website language support	Website language support

	booking.com and websites like SA Airways.			
R5	Already many accommodation websites – not SA owned, which means it's being marketed by those that do not know. They are vague and inaccurate information provided in marketing about specific details. There is need for integrated services as well.	accommodation websites – not SA vague and inaccurate information provided integrated services as well.	Local booking websites	Local booking websites
R6	The first thing is contactless check in, where you could go. And once you within the range, you immediately get a notification to say your room number seven, so you go to your room. And you don't even touch the door, the door just opens automatically. And your luggage comes through later or whatever. So, there's a lot of innovation happening in that space with accommodation. And also, more information about when, especially now people are wanting to know when my room was cleaned, was it properly sanitize. When was the last stayed in so there's a lot of data collection on accommodation people are going to want to demand, before they enter, you know, it will be more about health and safety.	check in, notification, information about room cleaned, t properly sanitizes, data collection on accommodation more about health and safety.	Notification services, Information sharing	Notification services, Information sharing
R7	seamlessly pay without any risk. As far as accommodation is concerned, you also want to be able to you know book accommodation in advance if you are booking yourself, all the necessary, you know heartache. That's going to make all prices seamless from, you know, the user experience going through the booking engines side of things. Being some being secure and providing confidence to the, to the booker that device can go further, go to seamless check in you know to ever seen this check in a third time because you can pre check yourself in ology energy. And you can even bypass reception and you can get the Zoom Room door. He seems to your phone 90 by example may seems that you can just use it to unlock your hotel room door, add meaning a key you know key cards	Seamless check in processes. E door locks.		

Appendix L

How can technology assist with transportation?

	Comment	Key Words	Themes	Categories
R1	Flight/ Road transport. Groups via coach. Online booking ahead of time. Want to ensure safety.	Flight/ Road transport, Groups via coach, ensure safety.	Safety, Group travel	Safety, Group travel
R2	. Cruise liner/Airport "is the air that I breathe clean?" Confidence. Convenience. Technology can assist with this. Push notifications via mobile with updates to reduce time wastage. Travel in groups. Less of a problem then. Individual travellers will use public transport. They are used to their own version of Uber in China. Most travel in groups so technology. They are using the 5g technology	the air that I breathe clean?" Push notifications will use public transport, using the 5g technology.	Push notification services in Health 5G technology	Push notification services in Health 5G telecommunication
R3	Providing more reliable and cheap transport information to avoid congestion.	reliable and cheap transport information	Information Sharing services	Information Sharing services
R4	In transport security issues are the most concern.	security issues	Safety	Safety
R5	Our public transport is a nightmare and unsafe. An app could assist here. Prevent unethical practices in transport.	public transport unsafe, unethical practices in transport.	Public transport regulation reliability	Transport regulation reliability
R6	transportation, again, similar to the Uber experience they have got DD in China, which is a much more seamless and more user-friendly experience than Uber.is. But what they've got is a range of transportation opportunities for example. It's not just about private taxis but it's all about public transport. And I know the city had been doing a great job in MyCiTi, but it's not penetrated. And there's not enough user-friendly information for tourists to just access that easily, unless you live in the city bowl area. Public transport is a big thing so I think the city can do a lot more by digitizing things like timetables and make it readily available in the Chinese language and also	DD in China, more seamless, a range of transportation public transport, MyCiTi is not penetrated more by digitizing timetables Chinese language	More seamless e-hailing and taxi services, transport information, language support	Digital transport, language support
R7	Shared transport, you know when you when you don't know the country, you're not familiar with things and to be able to guide one's way to know, we want to read solve the public transport book and pay for tickets, the timetables won't be provided. You know borrow kick that for years, and probably some sentiment around support services.			

Appendix M

How could technology assist with aspects such as support services in the tourism industry?

	Comment	Key Words	Themes	Categories
R1	ID photos, names before they arrive. Improve communication between operator and tourist. More personalized experience. Better customer experience.	Improve communication	Communication	Communication, Digital experience
R2	Information upfront…safety and security (insurance). Hospitals and medical care auxiliary services, procedures and quarantine facilities are jumping up the importance ladder taking over the old higher needs such as forex exchange, where to stay. Can be supported through technology via push notifications. Expect free Wi-Fi. Post photos. Emergency services can alleviate fears and promote options.	Information upfront…safety and security (insurance). Hospitals and medical care auxiliary services, via push notifications. Expect free Wi-Fi. Emergency services can alleviate fears and promote options.	Information sharing, Safety, Push Notifications	Information sharing, Safety, Push Notifications
R3	Creating more welcoming environments for the Chinese tourists. Offering the things they like food etc. and in their language. Government lead initiatives	welcoming environments, language, Government initiatives	Language, Government support	Language, Government support
R4	language translation support will assist Chinese to communicate better. The Wi-Fi offered in restaurants does not support many users as it is not like the industrial ones.	Language translation. The Wi-Fi support many users.	Language, Wi-Fi services	Language, Broadband facilities
R5	An app could help with restaurants. Recommend local tourism and tours. Brochures are not interactive enough they do not provide the personal interaction.	An app Recommend local tourism and tours. Brochures are not interactive	Electronic Brochures	Digital brochures, guides
R6	so support services are huge, you know, that is, to me, things like the film industry, the catering side, the mice business events business. And this is a huge industry on its own, and it's a multi-billion-dollar industry. Just those services supporting tourism. Tour guides, as well, all of that makes it easier through technology So I think, I mean, if I had to immediately prioritize what would be the first thing is guides, even with or without technology we need Chinese speaking guides. Now, there's a lot of opportunity there for people locally to learn and understand Chinese, like the very basic Chinese, you know there is the human interaction because digital can't replace that, something as simple as saying Niihau Nisha even just a few words will make them feel very comfortable.	Film industry, the catering side, the mice business, multi-billion-dollar industry, just those services supporting tourism. Chinese speaking guides, very basic Chinese, feel comfortable.	Multi-billion-dollar industry, Chinese guides	Investment opportunities, Language learning
R7	I mean, a lot of the things in these four points will also benefit our local population tremendously. And I think			

	also, just to go back to some of what the city's done. That was changing your document with the rollout of fibre and what I mean that's brilliant for the local population. So yeah, they can you know they can benefit from it, too. But the gifts free beneficiaries of that sort of allowed would be the local, local economy we use it to other tourism matchmaker 5%, if you'd like to have the usage, when			

Appendix N

Any other comments that you would like to make, that would assist the aim of this study?

	Comment	Key Words	Themes	Categories
R1	Very important market to Cape Town should surpass the European market.	Very important market, surpass the European market.	Important Market	Crucial market
R2	Can be supported through technology via push notifications. Expect free Wi-Fi. Post photos. Emergency services can alleviate fears and promote options.	push notifications, free Wi-Fi.	Information sharing, Push notifications	Information sharing, Push notifications
R3	The government also pays a big role in regulation and promoting Cape Town as a destination. Thus, more stronger ties are needed between China and Cape Town.	government promoting Cape Town, stronger ties between China and Cape Town		
R4	Communication is very critical; it makes everything else possible even this interview we are having. The most sought for attractions are Cape Point and Table Mountain. Cape point mostly because it appears in history studies but due to the environment protection act, there have been complaints about signal in Cape point. WeChat is still more convenient than UnionPay. The research should take technology as a means of achieving, to focus and assisting tourism is an enabler then focus on what Cape Town has such as fresh air and free open land.	Communication are Cape Point and Table Mountain. Cape point mostly because it appears in history studies, about signal in Cape point. WeChat more convenient than UnionPay, technology as an enabler then focus on what Cape Town has such as fresh air and free open land.	Network Coverage, Historic sites, Nature, Digital Payments	Network Coverage, Historic sites, Nature attractions, Digital Payments
R5	Chinese market is a huge market. We should become a popular destination market for Chinese. Our outdoor, natural environment are great attractions. Our figures are good if you look at the needs of the world. We need to offer good value. Government should support small operators. We need to know what they are being offered by their tours in other destinations. That is very interesting question: How are they travelling to other destinations? I do not know But I know is that we are not we are not equipped in that.	Chinese huge market. Our outdoor, natural environment are great attractions, Government support small operators. know what they are being offered in other destination, we are not equipped in that.	Huge market, Nature attraction, Need to explore	Crucial market, Nature attractions
R6	From what we are doing from a tourism perspective, throughout South Africa become more China friendly, the most important thing is our	Become more China friendly, relationship with Tencent, strategic partner of	Strategic partnership with Tech giants, digital readiness,	Digital readiness, Business partnerships, Digital payment Platforms

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	relationship with Tencent. Tencent is happens to be a major strategic partner of Nespas. Now listed in Europe, or Frankfurt or somewhere. And, that company is very progressive together with Alibaba. And we have set up a relationship with them on many fronts. The first is obviously WeChat pay, and next week we're having an engagement with the banks to help accelerate WeChat pay in South Africa. There's also the WeChat mini program and other related platforms to help our tourism businesses to get more digital already. So I think the first thing is this because your cause looks like it's tied very closely to the economic development of South Africa, the first thing is to focus on the opportunities for local tourism businesses, whether it's the restaurant or accommodation or attraction or transport people, for them to become China ready through technology and that's a big focus area. The economic impact of that should not be underestimated. What we're doing at the government level is enabling that by bringing through the likes of WeChat pay; Ali pay and various other tools to enable people to actually participate more in this virtual economy. So that is where we are focused, economically.	Nespas, Alibaba many fronts, WeChat pay, WeChat pay in South Africa. There's also the WeChat mini program, related platforms to help our tourism businesses to get more digital ready. opportunities for local tourism, restaurant, accommodation, attraction or transport to become China ready through technology economic impact government WeChat pay, Ali pay other tools to enable people to actually participate in virtual economy.	WeChat Pay, Ali Pay.	
R7	It's not something that I've done that I think we are able to measure. word of mouth Sure, but my feeling is yes, I mean, on LinkedIn. People salespeople. And, you know, you returned from a destination you've got photographs with amazing TV and YouTube, you know with passion and excitement about positive experiences, and it's definitely enabled influence on your friend or your family or your colleagues or whoever is listening, and it's definitely going to pique the interest, and possibly, I could end up being the next tourist, I agree. Yes. Awesome. Anything else that you could possibly assist Alan with Brian in terms of your comments please study. And there's nothing else really that comes to mind ever really covered.	Not attracting but enhancing the experience. Return with positive sentiment which could influence relatives to come to Cape Town.		

Appendix O: Ethics Clearance

Cape Peninsula
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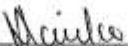| Office of the Research Ethics Committee	Faculty of Informatics and Design

22 October 2018

The Faculty Research Ethics Committee hereby grants ethics clearance to Mr Alvin Ngoni Amardu,

student number 217170900 for research activities related to the MTech in Information Technology

at the Faculty of Informatics and Design.

Title of thesis:	Cape Town as a smart destination tailored for Chinese tourists

Comments:

Research activities are restricted to those detailed in the research proposal and a letter of formal

consent from the participant/s must submitted to the Research Ethics Committee.

Maido	22\10\18
Signed on behalf of the Faculty Research Ethics Committee	Date

RESEARCH ETHICS COMMITTEE
INFORMATICS AND DESIGN
ETHICS APPROVAL GRANTED

2 2 OCT 2018

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