



THE INFLUENCE OF SMART TECHNOLOGIES WITHIN SERVICE-ORIENTED ORGANISATIONS

by

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ABSTRACT

The adoption of smart technologies (STs) can influence service-oriented organisations (SOOs) positively when implemented correctly. Research has revealed that when adequate due diligence and planning is done before implementing new technologies, the risk of implementing these technologies is significantly mitigated and reduced, as compared to adopting and implementing new technologies merely because it is new and exciting, without adequate due diligence and planning. In this study, the researcher aims to explore the influence of smart technology in transforming service delivery environments. Building on existing work around ST, the researcher asks the following questions: i) “What are the factors affecting the adoption of smart technology for service delivery in organisations?” and ii) “How can smart technology influence customer satisfaction within service-orientated organisations?” Various definitions of ST exist, meaning different things to different people; however, this research focuses on the definition of a technology being referred to as smart when it is an electronic device or system that can be connected to the Internet and used interactively.

The results indicate that various factors in the form of opportunities and challenges can influence the adoption of smart technology in transforming service delivery environments. Factors such as economic, political and social considerations, to name a few, are discussed in further detail in the study. Government’s role in regulating ST use in order to mitigate the potential abuse by organisations is also highlighted, as it is crucial to understand the risks and opportunities of ST from a governance perspective. Subjectivist and interpretivist philosophy was followed for this research, which allowed the probing of answers from the interviewees. As research strategy, a multiple case study was adopted. Twelve (12) SOOs were selected non-randomly, conveniently and purposively, and the main criterion for selection was that the SOOs made use of ST in one way or another. The sampling size of the study was 14 participants operating within 12 respective SOOs with a strong interest in ST.

Keywords: Smart technology, service-oriented organisations, customer experience, customer satisfaction

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DEFINITIONS

Word / Term	Definition
Customer experience	Perception or acknowledgment that follows from the stimulated motivation of a consumer who observes or participates in an event which can enrich the value of services and products (Foroudi et al., 2018:272)
Customer satisfaction	A measure of how products and services that are provided by an organisation meet or surpass customer expectations (Smith et al., 2017:302)
Smart technology	A smart electronic device or system that can be connected to the Internet and used interactively (Immonen & Sintonen, 2015:589)
Service-oriented organisation	A service-oriented organisation (SOO) is driven through leveraging service management practices across various industries (Peay, 2011)
Unit of analysis	Unit of analysis is the sample that is used for the study in order to assist the researcher in conducting the research (Leech & Onwuegbuzie, 2007:108)
E-hailing	The process of requesting a vehicle, or transportation pick up through a virtual device such as a smart phone or a personal computer (He & Shenab, 2015:93)

ACRONYMS

Acronym	Full Word / Term
AI	Artificial Intelligence
AR	Artificial Reality
BLE	Bluetooth Low-Energy
BT	Beacon Technology
CD	Customer Dynamics
CS	Customer Service
Fintech	Financial Technology
G2G	Government-to-Government
GPS	Global Positioning Systems
ICT	Information and Communications Technology
IoT	Internet of Things
MCS	Multiple Case Study
NFC	Near Field Communication
POS	Point of Sale
RPA	Robotics Process Automation
SC	Smart City
SOO	Service-Oriented Organisation
ST	Smart Technology
TCS	Tata Consultancy Services
TTRO	The Training Room Online
VR	Virtual Reality
WHO	World Health Organisation

CHAPTER ONE: INTRODUCTION

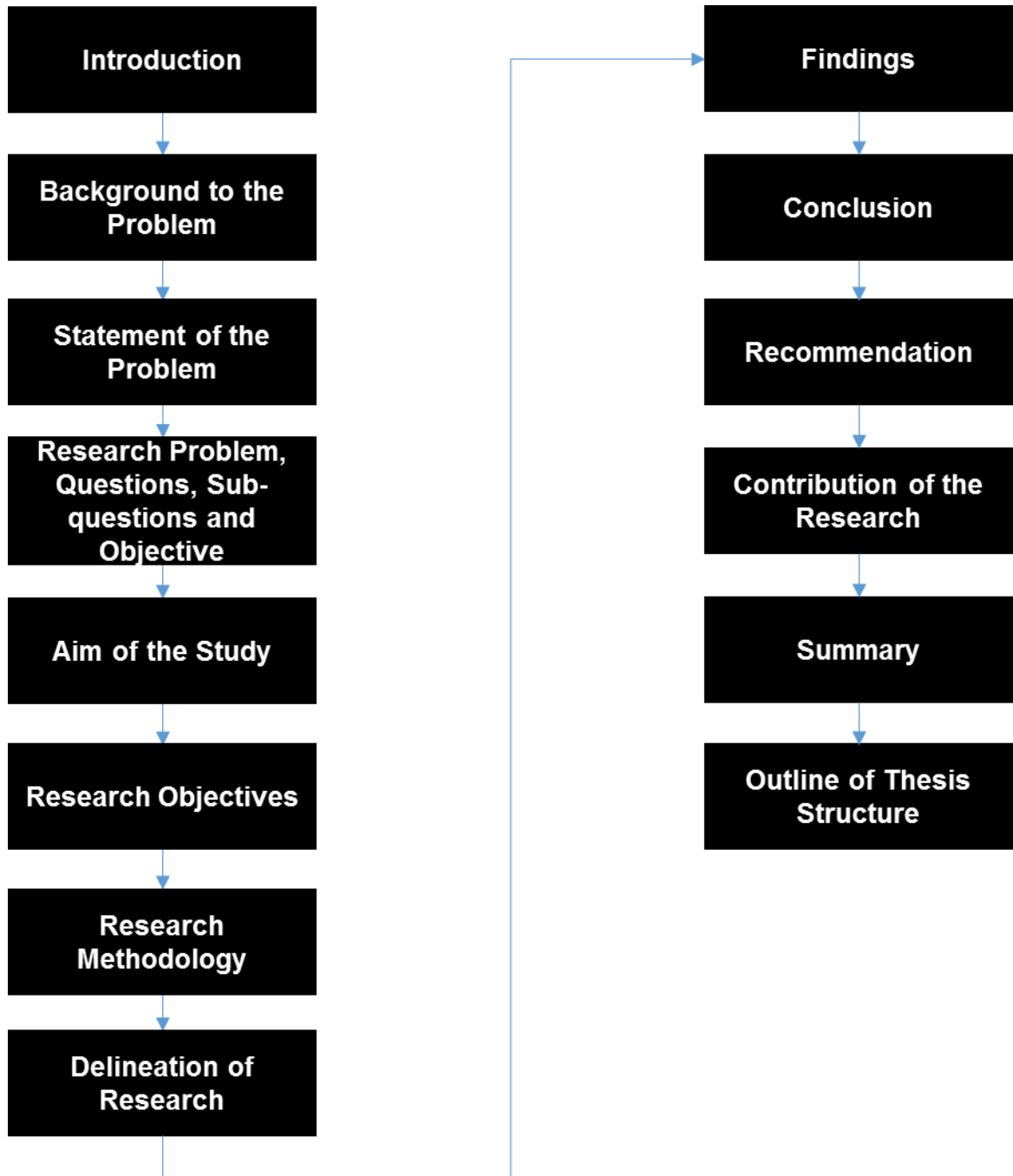


Figure 1.1: Chapter 1 layout

1.1 Introduction

Technology is at the epicentre of the day-to-day livelihood of most people, giving them the choice to utilise it. Technology has progressed in many ways. One such way is through smart technology (ST). STs are expressed as technologies that allow sensors, databases, and wireless access to collaboratively sense, adapt, and provide for users within the environment (Rinaldi & Tosi, 2018). ST holds vast potential for service-oriented organisations (SOOs) (Heyes et al., 2018). This research investigates the influence of ST within SOOs (Figure 1.1).

Organisations and individuals are exposed daily to various types of STs, either through their smart mobile devices or through their smart connected homes. Based on technology implementation case studies, organisations have habitually struggled to anticipate and address implementation impediments when introducing new technologies (Blanchard et al., 2018). As a result, many technologies have not been adopted by organisations or have failed to be used to their full potential. The adoption of ST is becoming increasingly popular in daily life, and is ever more valuable for those who choose embrace it.

1.2 Background to the research problem

There are three major forces driving service delivery in organisations, namely: i) continuously rising customer service (CS) delivery expectations; ii) increasing fiscal pressures; iii) and technologies that are enabling new ways of information management and utilisation. These forces have been shaping the service delivery sector and the manner in which organisations are providing services around the world (Peters, Korthaus & Kohlborn, 2018). Organisations have been researching and developing these forces in order to drive the transition to a modernised and renewed form of service delivery through the planning and piloting of creative approaches to connect with and serve customers. However, this is not true for many organisations within service environments as there is an increase in poor service delivery within these environments (Ardolino et al., 2018; Giri, Shakya & Pande, 2018; Heinze & Matt, 2018; Tengan, Aigbavboa & Thwala, 2018; McCray et al., 2018; Wasserman, Chuma & Bosch, 2018; Alzaydi et al., 2018; Wetterberg, Hertz & Brinkerhoff, 2017).

Rantala (2018) points out that government and public organisations are generally characterised by: i) poor service delivery; ii) poor responsiveness to customer grievances; iii) lack of clientele; iv) poor revenue collection; v) poor operation and maintenance of existing infrastructure; vi) and ineffective and inefficient use of resources. The increase in expectations of service delivery from customers is one of the forces that have grown from consumer interactions with private sector service

providers such as retailers and financial institutions (Adapa, 2018). Institutions are constantly competing and guiding to create stronger customer-centric approaches of carrying out business that provides the best possible customer experience through the most efficient delivery methods, which has come to define leading service delivery (Costello & Willcocks, 2018).

Fiscal constraints in organisations are the second force that affects service delivery, as organisations reduce spending to combat debt levels. Organisations more often than not find themselves seeking to do more with less, which frequently ripples down to a reduced standard of service delivery (Demirguc-Kunt, Klapper & Prasad, 2017).

The third force is driven by advances in technology to help improve the value of service delivery through the enhanced quality of customer interactions. An example of this is the Internet of Things (IoT) through the connectivity of everyday devices such as sensors and networks, which are the backbone of ST (Tutusaus, Schwartz & Smit, 2018). ST is becoming part of our everyday life. As the popularity of ST increases, innovative opportunities are presented to the service delivery industry, which organisations and governments can take advantage of (Perng, Kitchin & Donncha, 2017).

The degradation of service delivery in organisations negatively affects organisations and the value received by customers. With customers having more options than ever before, organisations need to identify smarter ways to deliver better services to customers (Mario et al., 2018). According to Di Liang et al. (2020), the lack of organisational accountability coupled with organisational corruption is among the contributors to service delivery degradation, thereby significantly contributing to the deterioration of customer confidence in organisations. Service delivery degradation has an impact on employment, as new types of skilled workers and specialisations within occupations are needed to drive overall organisational performance and growth positively (Ramaswamy, 2018).

Organisations need to adapt in order to manage these significant challenges, so as to create more value for their customers whilst also having to deal with the impact of employee morale due to the changing nature of technology adoption (Ro, Brem & Rauschnabel, 2017). Organisations are constantly seeking solutions to address service degradation in order to improve on the level of service delivery due to the lack of experience and exposure with such technologies. However, bottlenecks such the inadequate adoption of ST, remain contributing factors to the degradation of service delivery (Francisco & Swanson, 2018). Factors such as management, anxiety and

investment costs are known to limit technology adoption and play a role in the usage of technology in CS environments (Senyolo et al., 2018).

However, despite the already available information on CS delivery, little is known on how ST can contribute towards service delivery environments. Little has been reported on new and innovative ST adoption influences, particularly in the context of delivery environments (Miguel & Pedro, 2018). There is a strong deficit in effective and efficient service delivery contributions around ST in the literature because of the sluggish rate of adoption within SOOs (Ho & Quick, 2018). There exist service delivery inefficiencies in many SOOs (Giri, Shakya & Pande, 2018; Tengan, Aigbavboa & Thwala, 2018). This poor delivery is a result of the scarcity of skilled labourers, insufficient planning and monetary constraints (Tengan, Aigbavboa & Thwala, 2018).

According to Giri, Shakya and Pande (2018), the digital divide, i.e. process-oriented service delivery rather than result-oriented service delivery, prompts many levels of decision making, which are amplified by the failure to decentralise the necessary authority accountability. The inefficient use of Information and Communications Technology (ICT) to provide more convenient and efficient services has further been identified as a major challenge in service delivery environments.

The impact of inefficient and ineffective service delivery ripples through organisations. The effect of poor services includes customer dissatisfaction, service-quality issues, a decline in the delivery of high-quality service, customer disloyalty, and a decline in innovation (Meesala & Paul, 2018). An abundance of literature is available on customer satisfaction and service delivery, but very little is known about the contribution and influence that ST can make in service delivery environments within organisations (Paskaleva, Cooper & Concilo, 2018).

1.3 Statement of research problem

Despite the availability of sophisticated technologies such as smart technology (ST), organisations are finding it challenging to influence effective and efficient service delivery transformation through these technologies.

1.4 Research problem, questions, sub-questions and objectives

[Table 1.1](#) presents the research problem, research questions, research sub-questions, research methods and objectives of the questions.

Table 1.1: Research problem, questions, methods and objectives

Research problem	Despite the availability of sophisticated technologies such as smart technology (ST), organisations are finding it challenging to influence effective and efficient service delivery transformation through these technologies.	
Research Question 1 (RQ1)	What are the factors affecting the adoption of smart technology for service delivery in organisations?	
Research sub-questions (RSQs)	Research method(s)	Objectives
RSQ 1.1: What are the technological factors influencing the efficacious deployment of smart technology within service-oriented organisations?	Exploring cases using semi-structured interview/ interviews	To determine the technological factors influencing the efficacious deployment of smart technology within service-oriented organisations
RSQ 1.2: What are the economic factors influencing the efficacious deployment of smart technology within service-oriented organisations?	Exploring cases using semi-structured interview/ interviews	To determine the economic factors influencing the efficacious deployment of smart technology within service-oriented organisations
Research Question 2 (RQ2)	How can smart technology influence customer satisfaction within service-orientated organisations?	
Research sub-questions (RSQs)	Research method(s)	Objectives
RSQ 2.1: How can smart technology influence customer satisfaction within service-oriented organisations?	Exploring cases using semi-structured interview/ interviews	To determine how smart technology can influence customer satisfaction within service-oriented organisations
RSQ 2.2: How can smart technology influence customer experience within service-oriented organisations?	Exploring cases using semi-structured interview/ interviews	To determine how smart technology can influence customer experience within service-oriented organisations

1.5 Aim of the study

The aim of the study is to explore the influence of smart technology in transforming service delivery environments.

1.6 Research objectives

Objective 1: To determine the technological factors influencing the efficacious deployment of smart technology within service-oriented organisations

Objective 2: To determine the economic factors influencing the efficacious deployment of smart technology within service-oriented organisations

Objective 3: To determine how smart technology can influence customer satisfaction within service-oriented organisations

Objective 4: To determine how smart technology can influence customer experience within service-oriented organisations

1.7 Research methodology

Interviews along with semi-structured interview were adopted as data collection methods for the study. Data were analysed in terms of a subjectivist and Interpretivist philosophy. The data were then transcribed into meaningful information with the purpose of contributing to the body of knowledge.

1.7.1 Research philosophy

The subjectivist and interpretivist philosophy, which are elements of ontology and epistemology, were followed in this research (Saunders et al., 2007). Interpretivism focuses on understanding human nature and the varying roles of social actors by interpreting the psychological strategies undertaken by social actors. This allows the probing of answers from the interviewees in order to add context to their responses while adding significance and depth to the data that are collected.

1.7.1.1 Ontology

- i) Objectivism is defined as knowledge that exists and is waiting to be discovered. The nature of this approach is social by nature and requires the application of social methodology; therefore, it was not chosen for this research.
- ii) Subjectivism is defined as subjective knowledge. This approach has been chosen for this research, as the nature of the collected data is qualitative rather than quantitative – qualitative meaning that the collected data are unstructured and non-numerical, while quantitative means the data are numerical and structured.

1.7.1.2 Epistemology

- i) Positivism stems from the notion that science is the only way to learn about the truth; this approach was not chosen for the study.
- ii) Interpretivism is defined as the interpretation of elements for research. This approach has been chosen for the research study because data were collected from the participants, forming the case of the study.

1.7.2 Research strategy

A multiple case study was selected as research strategy. Twelve (12) SOOs were non-randomly, conveniently and purposively selected. The main criterion for selection was that the SOOs use ST.

Interviews along with semi-structured interview were the chosen data collection strategy for this study in order to allow the extraction of information directly from participants who are specialists and managers within the technology field. Twelve (12)

organisations were used as cases. An exploratory approach was undertaken due to limited literature available for the phenomena being studied. The respondents were interviewed based on the semi-structured interview to form the basis of interactions with the twelve (12) organisations (SOOs) ([section 3.3.2](#)), while allowing experts the freedom to express their knowledge and insight. The strategy focused on gathering data with the purpose of qualitatively analysing it, as the study was exploratory and evaluative in nature (Yang et al., 2018).

The respondents were selected through non-random, purposive and convenience sampling, choosing technology specialists and managers working in SOOs. The sampling size of the study was 14 ([section 3.3.3](#)), with the selected participants operating within 12 respective SOOs having a strong interest in ST (Teddlie & Tashakkori, 2010).

1.7.3 Unit of analysis

The selected organisations using ST were the unit of analysis. The study explored the unit of analysis by comparing twelve (12) SOOs, thereby viewing the analysis outcomes from an organisational perspective. The organisations have comparable units because they are all service-based by nature, with defined IT strategies (Boud et al., 2018).

1.7.4 Unit of observation

Data on the phenomenon under investigation are collected from the unit of analysis (Ary et al., 2018). The data, as unit of observation, were collected non-randomly, purposively and conveniently from the following participants within the organisations: Managing Director, two Innovation and Insights Leaders, two Heads of Product, Chief Operations Officer, Operations Manager, Smart Real Estate Leader, Technical Leader, Business Unit Manager, Business Analysis Application Delivery manager, Enterprise Application Head, Chief Technology Officer, and Delivery Consultant.

1.8 Data collection

The Data were collected through face-to-face conversations. Semi-structured interview guided by an interview guide ([Appendix C](#)) were used during the interviews. Interviews took between 35 and 45 minutes to complete. Data collected from the interviews were recorded and transcribed. The transcriptions were handed back to the interviewees to validate and confirm the correctness and content thereof. Written permission for the recording of each interview was obtained from the interviewees (Saunders et al., 2007).

Participants were briefed on the ethics to be followed throughout the course of the data collection procedure ([Appendix A](#)). Permission to conduct research on the twelve (12) SOOs was requested from each organisation individually. Once approval was received from a SOO, participants were contacted through email to inform them of the research and to ask if they would be willing take part in the research. Each participant was required to sign a consent form ([Appendix A](#)) (Green & Thorogood, 2018). The university ethical clearance process will be followed for the ethics clearance requirement for the postgraduate research and conference papers by the faculty of business and management sciences. which includes a participant consent letter that can be found in Appendix B.

1.9 Data analysis

The study was qualitative in nature (Yang et al., 2018). The purpose of the data analysis was to break down the collected data into smaller pieces for it to be useful information for the study. Data were collected through qualitative analysis during the interview process and transcribed into a plain text construct for the researcher to gain in-depth insight into the data. The collected data were coded, keywords were identified, summarised, and categorised, and a thematic analysis was conducted.

1.10 Ethics

The participants were briefed on their rights in terms of the ethics prior to taking part in the interviews. This was included to let the participants know that if they felt uncomfortable in any way due to the nature of the questions, they were not obliged to answer them and they had the freedom to withdraw their answers or remove themselves from the research whenever they felt the need to do so. The researcher adhered to the following principles of research ethics: i) minimising the risk of harm; ii) obtaining informed consent; iii) protecting anonymity and confidentiality; iv) avoiding deceptive practices and principles; and finally, v) providing the right to withdraw (Orb et al., 2001).

1.11 Delineation of the research

The following were excluded from the study:

- All organisations not using ST
- All organisations without a SOO focus
- All organisations not implementing ST initiatives
- All organisations that do not have sustainability practices as part of their governance

1.12 Findings

Findings (33) were derived through the investigation and analysis of data collected during the study. From the 33 findings, seven (7) headline findings were categorised, as listed below.

Headline finding 1: Government regulations need to be in place in order to manage technological organisations due to their increased growth rate and speed of technology

Headline finding 2: Correctly implemented STs have the potential to improve service delivery within service-oriented organisations

Headline finding 3: On the back of comprehensive business case and understanding the return on investment, it is economically viable to implement ST within organisations

Headline finding 4: ST allows organisations to give a faster, personalised response as well as individualised service to customers

Headline finding 5: Organisations are moving away from many fixed capital assets and moving in general to a pay-as-you-use model

Headline finding 6: The gap between digital and physical world is starting to close; however, it still has a long way to go, but in some areas, it is obviously happening much faster than in others, for instance, the Fintech space

Headline finding 7: Organisations drive towards tighter margins through over automation; the human touch is being replaced

1.13 Conclusion

For the successfully implementation and adoption of ST within SOOs, a robust and clear digital roadmap needs to be defined. The roadmap needs to align with a company's core business vision and values. ST has the potential to provide significant benefits to organisations when implemented correctly and supported by a valid business case. However, ST can also be detrimental to organisations if it is implemented for the sake of keeping up with technology, as history has shown that technology can be a two-edged sword, being destructive if not managed correctly.

1.14 Recommendation

SOOs can benefit effectively and efficiently from ST when adopted and implemented correctly. However, correctness and due diligence are essential from the infancy phase of the digital transformation process. This can result in a good business case being established that justifies the need for investing in ST. ST has the potential to improve experiences and services for targeted customers within SOOs. Technology alone is not enough to assist organisations in improving customer services and experiences; it also needs to be coupled and integrated with support from an organisation's top management. Assistance from national and local government will also contribute to a higher adoption rate of ST. Finally, an organisation should carefully consider their adoption of ST, as they need to ask themselves if it will truly be to their benefit. Once this question is answered, they will be in a good place to act accordingly. The recommendation is that under wise and knowledgeable counsel with experience in smart technology, along with a deep understanding of ST's capabilities, ST can have a positive impact on SOOs.

1.15 Contribution of the research

The study aspires to contribute to the body of knowledge by exploring the role of ST in transforming service delivery environments in SOOs. The study desires to support SOOs in identifying the potential of ST implementation within organisations that have the vision to add value to customers through improved service delivery.

1.16 Summary

There are many factors to consider when evaluating ST. Organisations need to be cognitive of what to expect when adopting ST. This being said, there are also various definitions of ST, which mean different things to different people. This study aims to explore the influence of smart technology in transforming service delivery environments. The research is exploratory in nature, taking on a subjectivist and interpretivist philosophical approach. The case is based on twelve (12) SOOs and fourteen (14) participants.

The problem statement, research questions, sub-questions, methods and objectives have all been addressed in this chapter. Data collection was done by means of interviews. Data analysis was done by summarising and categorising the data, where after a thematic analysis was conducted. Ethics were adhered to in accordance with the Cape Peninsula University of Technology ethics governance, policies and procedures.

1.17 Outline of thesis structure

In **Chapter One**, the introduction to the research as well as the research problem, aim of the study, research objectives, research strategy, contribution of the research and a summary are provided.

Chapter Two addresses the literature review that covers 'Smart Technology' as a concept, definitions of ST, emergence of ST, and the challenges of ST along with a summary.

Chapter Three elaborates on the research methodology, the research strategy, the research approach, and the ethics of the study.

Chapter Four reports on the analysis as well as the summarised findings following the respective research questions.

Chapter Five addresses the themes of the study with regard to the respective research questions.

Chapter Six provides the conclusions and recommendations of the research.

Chapter Seven includes a reflection and future research.

CHAPTER TWO: LITERATURE REVIEW

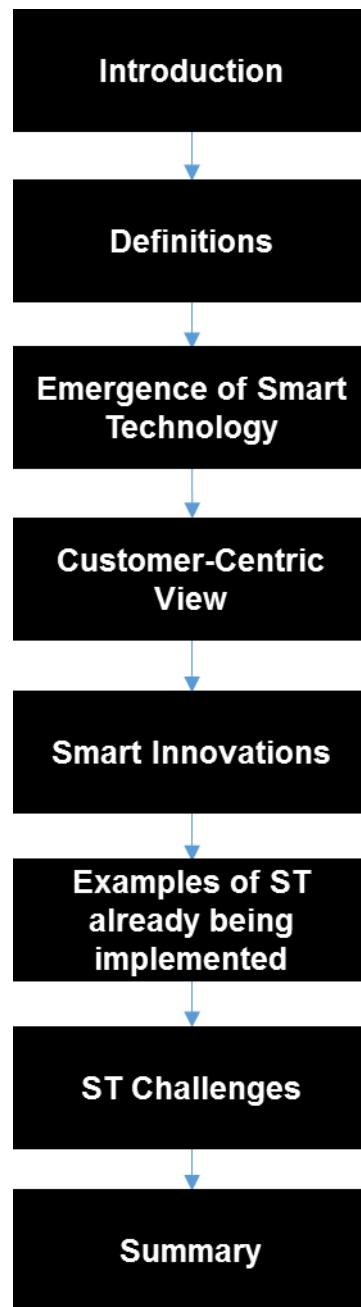


Figure 2.1: Chapter Two layout

2.1 Introduction

The adoption of smart technology (ST) has never been as evident as now, with these technologies growing at an exponential rate while being utilised by organisations, governments and individual consumers alike. This being said, SOOs are identifying ways to make use of ST in order to transform and improve service delivery environments while influencing customer service (CS).

Chapter Two elaborates on definitions, the emergence of ST, a customer-centric view, smart innovations, examples of ST already implemented, and ST challenges (Figure 2.1).

2.2 Definitions

Definitions for smart technology date back from 2015 (Table 2.1), for example, Immonen and Sintonen (2015:589) indicate that a technology “is referred to as smart when it is an electronic device or system that can be connected to the Internet and used interactively”. This is a strong all-encompassing definition, as it touches on all the elements that form a complete and consolidated ST. Anderson and Bolton (2015:382) define ST as “the use of ST such as sensors and radio-frequency identification (RFID) within the retail sector, to capture data to be interpreted for retail acumen”. This definition touches on the utilisation potential of ST in the retail sector.

Brougham and Haar (2018:245) define ST as part of “Smart Technology Automation, Robotics and Artificial Intelligence (STARA)”. This is a vague definition as it implies that ST is part of a bigger concept with no actual reference to ST in particular, and is not defining the concept as a whole.

Shareef et al. (2018:1) state that ST “communicate[s] with household appliances and utilities, monitor[s] energy usage, and receive[s] information – a smart meter is a common example”. Shareef et al. (2018) provide a good definition of ST capabilities, but they do not define exactly what ST is; rather, they focus on ST’s use in a household environment instead of the holistic impact of ST.

Carter and Mehta (2018:1) define ST as “any technology that requires a digital interface and the ability to respond to direct interaction from the user. These include devices such as, Smartphones, Interactive Whiteboards and specific software or applications that can be downloaded to a computer”. Carter and Mehta offer a great definition of ST, which, in return, gives a solid comprehensive outline of the technology.

Table 2.1: Definitions of smart technologies

Authors	Definitions
Rinaldi and Tosi (2018:264)	"Smart technologies allow sensors, databases, and wireless access to collaboratively sense, adapt and provide for users within the environment."
Anderson and Bolton (2015:382)	"The use of smart technologies such as sensors and radio-frequency identification (RFID) within the retail sector, to capture data to be interpreted for retail acumen."
Immonen and Sintonen (2015:589)	"A technology is referred to as 'smart' when it is an electronic device or system that can be connected to the Internet and used interactively."
Brougham and Haar (2018:245)	"We initially defined STARA for respondents stating Smart Technologies, Automation, Robotics and Artificial Intelligence (STARA)."
Carter and Mehta (2018:1)	"Smart technologies as any technology that requires a digital interface and the ability to respond to direct interaction from the user. These include devices such as, Smartphones, Interactive Whiteboards and specific software or applications that can be downloaded to a computer."
Shareef et al. (2018:1)	"Smart technologies communicate with household appliances and utilities, monitor energy usage, and receive information – a smart meter is a common example."
Singh et al. (2020:2)	"Internet of Things (IoT), Artificial Intelligence (AI), and Machine learning (ML) are smart technologies."
Konstantinou, Nomicos and Kavoura (2020:16)	"What makes a city smart is the combined use of software systems, hardware and network technologies (referred as smart computing technologies) to improve the services in several key areas: (1) city administration, (2) education, (3) healthcare, (4) public safety."

Finally, Singh et al. (2020) list three different types of STs, namely, Internet of Things (IoT), Artificial Intelligence (AI), and Machine learning (ML), but fail to touch on the high-level concept of ST. This study is based on the ST definition of Immonen and Sintonen (2015) because of the across-the-board brief, which touches on the integration of all the elements that constitute a ST, including a physical device, software and connectivity.

2.3 Emergence of ST

STs emerge in the service delivery industry for many reasons. One of the reasons is that the customer's needs and desires have changed compared to some years ago. These changes can be contributed to many factors. One such factor is the digitalisation of the socio-economic environment. As a result, an increase in popularity of customer digital devices has been created. Devices such as smartphones have emerged with capabilities that allow many organisations the utilisation of the power of these devices for their own and for the customers' benefit.

STs are altering the nature and quality of interactions between service delivery organisations and customers (Criado & Gil-Garcia, 2019). Pioneering organisations focus on the full spectrum of the customer journey, which is tailored to make the most out of the level of integration between the physical and digital world (Ul-Haq et al., 2020). Examples of these technologies include the following:

- i) Financial institutions alerting clients on their account balance status;
- ii) licensing agencies proactively contacting customers for license renewals;
- iii) pharmacies reminding patients when prescriptions need to be renewed; and
- iv) tax agencies sending out reminders for tax filing dates (Carter & Mehta, 2018).

ST creates a stronger connected experience for their customers while enhancing service delivery outcomes (De Keyser et al., 2019). A large-scale survey found that organisations which 'pushed' driver's license renewal notices, had customer satisfaction scores twice as high than those who did not (Hirt & Willmott, 2014).

Recent advances in technology have led to the emergence of innovative technological smart solutions providing unprecedented opportunities for application in various industries. It has become paramount for businesses to explore the potential of technologies, not only to optimise existing processes but also to facilitate the creation of more meaningful and personalised services and experiences for themselves and customers as a whole. The research identifies and bridges the current knowledge gap between ST and CS by understanding how ST can facilitate personalised experiences in the context of SOOs (Neuhofer, Buhalis & Ladkin, 2015).

Localisation is the activity of creating something local in nature or character and limiting it to a specific location (Ramos & Del Mar, 2019). Localisation is fundamental to enabling the emergence of ST (Ramos & Del Mar, 2019). Methods are required to accustom organisations and individuals to ST so as to ease the adoption of these technologies in local environments. ST needs to be enabled in a logical way. This includes ST guides, learning material and interactive handovers that need to be in place to empower the end users of these technologies. ST users need to initially experience the technological value in familiar settings so that they can intelligently measure the benefits they have experienced before implementing and adopting them to scale (Pahlavan, Krishnamurthy & Geng, 2015).

ST needs to go through a discovery phase before it can be perceived as adding value. An example of this is Global Positioning Systems (GPSs). GPS technology was only accessible commercially from the 90s onwards, as prior to this it has been used for

sophisticated military applications and not for commercial use (Margulis & Galli, 2020). The cost of GPS technology was high in the past; however, the costs have dropped significantly and the technology is available everywhere. For example, nearly all smartphones, smart watches and smart devices have embedded GPS chips, which ties back to the point of localisation and the emergence of ST, as the GPS technology first needed to be adopted and utilised in local military environments before they became widely commercially useful and available. The technology needed to prove its value for the military, and this value had to be taught to, and adopted by its end users before it was adopted on a larger commercial scale (Ilcev, 2019).

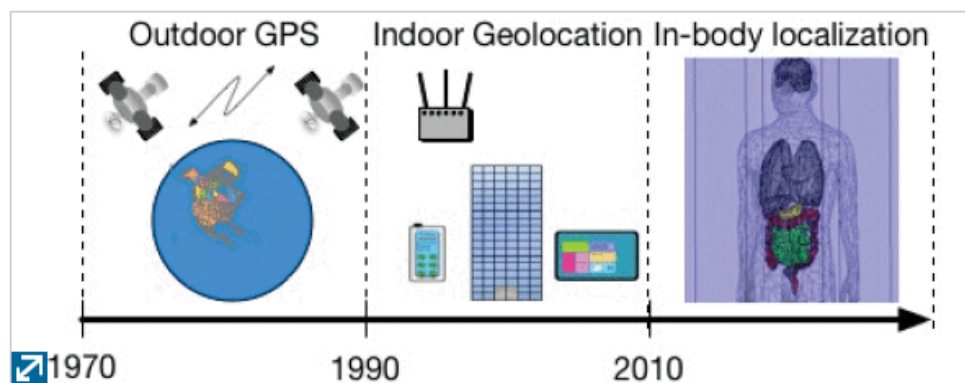


Figure 2.2: Evolution of popular localisation technologies over the past few decades (adopted from Pahlavan, Krishnamurthy & Geng, 2015:3059)

After the localisation of ST, we began to see the emergence of this technology globally, therefore the globalisation of ST (Figure 2.2). Globalisation is the proceeding phase once localisation has been adopted successfully; thus, the technology is then adopted on a global scale, for instance, smart phones, resulting in almost every country, organisation and individual being exposed to ST in one way or another (Osherenko, 2019). Globalisation of ST means that end users on a large scale have experienced successful benefits from the technologies, for instance, people are able to navigate roads better and make use of smart transportation systems, which benefits organisations and people’s livelihoods positively (Zhang et al., 2017).

2.4 Customer-centric view

Customer attitudes have evolved over the years and rather than being passive recipients of healthcare services, many customers want to manage their well-being actively (Lakkisto, 2020). This has led to organisations launching platforms able to integrate and scale customer-centred health and human services in cost-effective ways. Digital smart technology platforms enable targeted healthcare literacy, self-management, and remote patient monitoring (Zaki & Neely, 2019). The State of Delaware is an example of this. The State has launched a platform to develop mobile

applications that allow customers access to their personal electronic health records and obtaining information on value-based health choices and care delivery options (Dhru, 2018). ST allows organisations to anticipate customer needs and adapt delivery platforms and service options. Customer needs are kept updated while generating ongoing segmented customer feedback as a key success factor (Edelenbos et al., 2018). ST caters for organisational and individual service needs while remaining simple and easy to use in order to achieve optimal results.

SOOs have recognised the importance of identifying and advancing customer experience, as highlighted by Pantano and Timmermans (2014). The authors argue that the relationship between customers and organisations is strengthened by emotional engagement, and it can easily use interactive interfaces through functional devices. This, in turn, empowers customers and organisations with dynamic information to make informed and purposeful decisions.

Technology usefulness becomes smart by connecting organisations and customers with a common objective of achieving better customer dynamics and customer experience (Ahmadinia, Karim & Ofori, 2015; Ostrom et al., 2015). Customer dynamics (CD) in this context refers to “the flow of searching, comparison and evaluation activities that take place between a customer and the organisation” (Lemon, White & Winer, 2002:12). The current study elaborates on the strategies for creating dynamic customer experiences in SOOs leveraging ST. An example of this can be seen in the retail industry, which presents some of the customer solutions provided by retailers that influence the customer dynamics and experiences.

It is vital for retailers to be conscious of customer experiences, as these experiences require smart retail solutions able to meet customer expectations ([Table 2.2](#)). Shifts in customer behaviour can be overwhelming for retailers unless they are able to embrace the changes in customer dynamics and offer experiences expected by customers.

Table 2.2: Examples of customer solutions in a smart retail context

Customer Solutions	Smart Retail Application Example	Reference
Mobile payments/ Point of Sale (POS)	Use of Near Field Communication (NFC) readers, tap-and-go systems or virtual wallets by retailers that support these forms of payment will likely increase at a fast rate.	Barthel et al. (2015)
Virtual reality experience	Retailers are experimenting with smart mirrors in dressing rooms. Depending on the technology used, these can allow the “virtual trying-on” of clothes, propose accessories to match an outfit, enable shoppers to upload photos of them wearing their new outfit to social media, and support electronic ordering straight from the dressing room.	Pantano and Naccarato (2010)
Personalised promotional offers	Beacon technology offers stores the opportunity to identify individual shoppers who have installed the store's application on their smartphone. They can then propose personalised offers and discounts to that shopper as they browse based on the data they already have on that customer's preferences and previous purchases.	Skinner (2014)
Browse and order	Retailers are setting up ‘browse and order’ points for shoppers to browse catalogues, order or reserve items and have them delivered to a location of their choice. As a result, customers are enabled to avoid queuing in-store.	Davis (2014)
Product trial and display	The technology makes use of bright lighting for fitting rooms, changes lighting based on the garment a customer is trying on, or illuminating the product that a customer is interesting in when browsing through a catalogue.	Leceta and Könnölä (2019)

Retailers that keep a close eye on customer behaviour and their changing online trends will have stronger business prospects. Amazon and Alibaba are good case examples of retailers harvesting customer behaviour.

2.5 Smart innovations

The rise of smart mobile innovations such as wearable technology, virtual reality and blockchain technology is bridging the gap between the digital and physical world, resulting in a more user-friendly and interactive customer experience. The ST market was projected to grow from \$2.99T in 2014 to \$8.9T in 2020, managing a 19.92% compound annual growth rate (Naidu, 2018). STs in the form of watches, glasses and general house appliances powered with smart chips allow users the opportunity to browse the internet, view pictures, and navigate and experience augmented reality (Nilssen, 2019). The impact of ST is growing in popularity in various domain sectors such as logistics, education, health, and financial services.

In retail, Beacon Technology (BT) is a trend disrupting the retail sector by increasing value to the way customers shop and the way retailers collect and measure shopper and operational data (Kranabitl & Pikart, 2018). The technology operates by locating the customer through transmitting Bluetooth Low-Energy (BLE) wireless technology through a signal transmitted by the customer's mobile application on his/her smartphone. The technology is then used to push promotional information automatically on products, resulting in creating a stronger personalised shopping experience for customers (Inman & Nikolova, 2017). BT benefits retailers through the collection of valuable insights on customer behaviour, e.g. the time customers spend on making purchasing decisions as well as an improved metrics to measure success (Kranabitl & Pikart, 2018). Investing in BT may be a way of staying ahead in a competitive industry (Roy et al., 2018).

The raise of smart city (SC) initiatives reveals how cities can move towards sustainable futures. To achieve this goal, SC initiatives require citizens with 21st century skills to be able to drive ST innovations actively. This goal can be enabled through education as it plays a fundamental role in the formation of these smart citizens (Trevisan et al., 2019).

Traditional education has remained in traditional academic environments, for example, as schools and universities; however, through ST, the learning environments will be expanded to more places around the city, which are less traditional and more progressive. According to Zhuang et al. (2017), through ST, learning environments will be in public places, leading to the decentralisation of education into different locations in the city. With the inclusion of ST elements from smart cities into education, doors to new educational services will open, and with multiple interaction channels aiming to support students in their physical and digital learning activities, STs will play an important role in logistics as a competitive factor. In the past, only large organisations could afford such systems, leaving small and medium companies with limited options (Gregor et al., 2017). This has now been alleviated because of smart models based on cloud computing, and e-hailing technologies such as Uber and Bolt, which makes the management of information easier while providing cheaper access to logistics.

As logistics improve due to ST, sustainable logistics becomes a discussion point, for example, the current state of electric cars for consumers and goods distribution. By analysing their strengths and weaknesses, it is determined that even though optimisation can and has been done to replenish energy, the battery technology still has its limitations in terms of range and overall usage (Shen et al., 2019).

With ST in healthcare, the swift adoption and evolution of mobile technologies, which allow for mobile remote health monitoring, brings the opportunity to offer new smart-oriented healthcare services (Portnoy et al., 2020). ST explores the opportunities and challenges of health that are yet to be overcome in health environments, which can be applied in areas such as hospital monitoring, with the aim of enhancing the autonomy and comfort of patients as well as reducing the latency in emergency services (Hossain et al., 2019). Examples of trends include the deployment of a network of sensors in the body for patient monitoring, smart fitness trackers, smart syringes, and smart pills containing computer chips, which emit signals that trigger a computer, thereby allowing health professionals and patients to monitor medical adherence (Moro Visconti & Martiniello, 2019).

ST in financial services has grown at a faster rate than any other industry with the rise of Financial Technology (Fintech) in business (Gazel & Schwiendbacher, 2020). Fintech has automated and simplified processes for enterprises as well as disrupted the financial sector at the same time (Haddad & Hornuf, 2019). ST in financial services has improved transaction management as one of the main process components in conducting business transactions. At the same time, Blockchain technology can be used to optimise business technology applications and infrastructure (Yaga et al., 2019).

2.6 Examples of ST in action

Frigidaire refrigerators are being hauled across Southern California with autonomous trucks built and operated by smart self-driving technology. These autonomous trucks are on the freeway and move goods from a warehouse in El Paso, Texas to a distribution centre in Palm Springs, California (Heard et al., 2018). This is an excellent example of how ST is servicing the transport industry. It needs to be mentioned that at this point in time (2020), these autonomous trucks are still monitored by human drivers in the truck cabs to supervise the auto-piloted trucks. Even so, it is a huge advancement in showing the impact of ST in industries. It is also well known that organisations such as Tesla, Volvo and Daimler are working on similar technologies, which goes to show the potential ST has to improve the level of service delivery in today's transit world (Zantalis et al., 2019).

Virgin Atlantic ran a pilot project at London's Heathrow Airport, providing staff in its upper-class lounge with Google Glass technology, a form of smart eyewear that features head-mounted displays (Jimenez et al., 2014). When customers enter the lounge, a Virgin representative greets them by their name and begins the check-in process using the technology. The representatives also use the glasses to provide

instant updates on flight and destination related information. Staff members report that being able to access information while simultaneously looking at the customer improved service quality (Farias et al., 2016). Although Virgin experimented with these smart glasses in an airport lounge environment, it is also directly relevant to over-the-counter services delivery. The emphasis changes from exchanging information efficiently to providing an exceptional customer experience.

Health Vivametrica is a start-up based in Calgary, Canada, which has developed a functional activity ST assessment tool that begins by generating health-related data through wearable devices such as fitness trackers (Hildebrand et al., 2019). Technology studies reveal trends against population data to forecast the probability that a user may experience chronic health issues; therefore, ST has the ability to enable users with insights that can be shared with medical professionals to ensure that early action is taken in order to reduce the likelihood of future health problems (Firouzi et al., 2018).

An example of how ST is stimulating government-to-government (G2G) collaboration can be found in Singapore and Hong Kong where these governments implemented an Automated Immigration Clearance system, which aims to improve the convenience of short-term immigration (Farias et al., 2016). The system benefits citizens who have visited the other country at least three times in the past twelve months and hold a passport valid for more than six months. The initiative allows qualifying citizens to clear immigration through automated gates on their own, making life easier for travellers while facilitating business activity between the two countries.

The timeframe for 21st century ST service delivery key drivers and trends becoming mainstream is different in various markets. However, many ST services exist as a core focus for organisations in markets, thereby making it an extremely significant area of research with crucial contributions to the body of knowledge (Wu et al., 2018).

2.7 ST challenges

The following will be discussed in this section: i) leadership and transformation; ii) skills challenges; iii) the innovator's dilemma; iv) IT challenges; v) technology; vi) governments; iv) and the customer. Chourabi et al. (2012:10) separate the challenges into eight categories, with challenges inside each of these categories as well as separate strategies to address.

Sánchez-Corcuera et al. (2019:10) identify eight challenges SOOs need to face when adopting and implementing ST (Table 2.3).

Table 2.3: ST challenges faced by SOOs (adopted from Sánchez-Corcuera et al., 2019:10)

Categories	Challenges
Managerial and organisational challenges	Include project size; manager's attitude and behaviour; users or organisational diversity; lack of alignment of organisational goals and projects; multiple or conflicting goals; resistance to change; and turf and conflicts
Technological challenges	Include IT skills (lack of employees with integration skills) and organisation-related challenges (lack of cross-sectoral cooperation and inter-departmental coordination, unclear vision of IT management, politics and culture issues)
Government	Includes collaboration; leadership and champion; participation and partnership; communication; data exchange; service and application integration; accountability; and transparency
Policy context	Includes challenges related to the integration of ICT with political and institutional components, as each one has its own agenda
People and communities	Include digital divides; information and community gatekeepers; participation and partnership; communication; education; quality of life; and accessibility
Economy	Includes factors around economic competitiveness such as innovation, entrepreneurship and productivity, among others
Built infrastructure	Includes IT infrastructure (internal systems restrictions; lack of knowledge regarding interoperability; availability and compatibility of software systems and applications); security and privacy (threats from viruses, worms and Trojans; privacy and personal data); and operational cost (high IT cost, IT professionals and consultancies; cost of installation and maintenance)
Natural environment	Includes all the challenges related to the sustainability of the introduction of ICT

Pierce and Andersson (2017) propose their taxonomy for SC challenges, focusing on municipal decision making, in which they analyse these challenges from a theoretical background and based on interviews they conducted. Pierce and Andersson (2017:2808) separate the challenges into eight categories (Table 2.4), with challenges inside each of these categories and separate strategies to address. The challenges, indicated as non-technical, include: i) collaboration; ii) financial; iii) government; iv) governance; v) awareness; vi) economy; vii) interoperability; and viii) privacy.

Table 2.4: Proposed taxonomy for smart city challenges (adopted from Pierce & Andersson, 2017:2808)

Categories	Challenges
Collaboration	Includes weak collaboration with external stakeholders
Financial	Includes challenges with limited funds for SC initiatives, large up-front investment, lack of business model, and difficulties in monetisation SC investments
Government	Including collaboration, leadership and champion, participation and partnership, communication, data exchange, service and application integration, accountability and transparency
Governance	Challenges that surge from outdated rules and regulations that interfere with SC initiatives
Awareness	Includes challenges regarding the lack of knowledge and experience in SC-related technologies
Economy	Including factors around economic competitiveness such as innovation, entrepreneurship, and productivity, among others
Interoperability	Includes challenges regarding SC integration
Privacy	Includes the problems of big data while at the same time preserving citizen privacy

2.8 The domain challenges

The following domains are discussed: i) agriculture; ii) energy; iii) education; iv) environment; v) government; vi) healthcare; and vii) security.

2.8.1 Agriculture

In the agricultural domain, ST has advanced forward thinking, leading to the creation of new machinery and systems, but challenges are still experienced (Groot et al., 2019). For instance, cities are occupying land that has previously been fertile. The development of smart cities resulted in developers and farmers having to find sustainable and responsible ways to produce food that could have been cultivated on the land.

Vertical farming (Kozai et al., 2019) is an example of such a solution. Vertical farming includes attempts to farm and harvest yields inside buildings. Studies have been conducted to assess the feasibility of different architectures for buildings known as 'smart buildings' dedicated to vertical farming (Al-Chalabi, 2015). These buildings are designed in such a way that it takes into account the water and electricity consumption and the structure size of the building. The components are known to be some of the main challenges when creating smart buildings with regard to developing an ecological solution (Vincent et al., 2019).

STs such as IoT, GPS and cloud-based services are becoming increasingly popular in the agriculture industry (Rotz et al., 2019). This is pushed by the increasing need for high precision digital farming practices, as well as data analysis and collection from crops. The agriculture industry is becoming smarter with the implementation of ST. Studies have shown that from the data collected since ST implementation, farmers started yielding larger quantities and higher quality of crops. Smart agriculture is enhanced due to the rapid rise of food demand and the global growing population (Taneja et al., 2019). Smart agriculture makes use of advanced technologies along with connected devices to automate the farming process so as to assist farmers with making accurate decisions. Data on farms are collected through the utilisation of drones, sensors and GPS, which is then transferred to cloud services for decision making.

In agriculture, ST has been extremely useful in the management of crop production. For example, because of the accuracy in technology and its ability to be programmed, crop sprayers are able to spray chemicals effectively and efficiently while reducing waste. Crop sprayers are set up with AI technology to differentiate between essential crops and weeds and to target only crops or weeds based on their programming by utilising graphical processing technology. Farmers make use of ST to manage agricultural operations such as pest and disease management. ST reduces the negative impacts that conventional farming has on the environment and human health. Smart tags (Figure 2.3) are also great examples of ST being applied in the livestock area within agriculture (Partel et al., 2019).

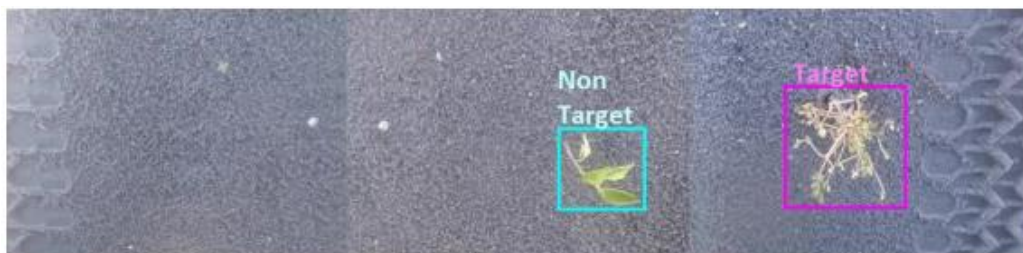


Figure 2.3: Smart sprayer detection on weed portulaca as target and pepper as non-target (adopted from Partel et al., 2019:342)

Another example is the way smart tags are being tagged on animals with the intention to gather vital health and movement information of the animals. Data such as livestock temperature assist with identifying possible disease. Nano technologies play a significant role in assessing this data by making use of microelectronics and sensors. Once gathered, the data are analysed into information that is used by farmers and health specialists to make informed decisions regarding their livestock (Neethirajan, 2017).

It is of concern that the rapid introduction of ST in the agriculture sector may reduce the majority of manual labour jobs (Cruz et al., 2017). Smart farming with its automated machinery and streamlined solutions poses a threat to the agricultural workforce. As more of these technologies are being implemented, more jobs become obsolete. Farmers need to ensure that their manual labour resources are upskilled and able to manage these technologies for job sustainability to be maintained. Farmers also need to ensure that alternative jobs are created for those workers who lose their jobs. As much as ST will have positive economic benefits for farmers and organisations, technology should not be placed above the wellbeing of individuals working on the farms.

Despite the risks involved in implementing ST, food production has the potential to increase with the correct utilisation of ST. The use of ST in farming holds the potential to reduce most of the concerns of food security and shortages (Shirzadifar, 2013).

To realise ST and SC goals, the involvement of citizens is important (Cardullo & Kitchin, 2019; Bacqué & Gauthier, 2017), as a smart city needs to fulfil and realise the needs within the city. Citizens should be involved in the city in three ways: “i) as democratic participants; ii) as co-creators; and iii) as ICT users” (Simonofski et al., 2019:665). The citizen in a democratic political system also needs to be involved in future decisions regarding their environment. The adoption and implementation of ST in their environment needs the citizen in order to be successful. Citizens as co-creators need to be active stakeholders in building ideas and tools for the city rather than being passive agents. Citizens should be encouraged to become ICT users with the capability to utilise the resources and infrastructure within the city from a technological perspective in order to add value to their lives.

Smart citizenship is focused on the cohesion between technology and citizens working together to improve services in inhabited environments. Smart citizenship makes use of STs to improve the lives of citizens by putting in place the correct infrastructure to support the citizens. Infrastructure such as IoT enables the connectivity of multiple ST devices to increase service productivity for citizens. The more citizens become accustomed to digital technologies, the faster it will be for them to become smart citizens in a digital context (Sadoway & Shekhar, 2014).

Citizens need to contribute and engage actively with governments and the public sector to ensure their needs are taken into account while implementing smart citizen initiatives. Therefore, all stakeholders need work together to drive the successful adoption of these technologies. Smart citizenship will make use of data-driven

decision making within their inhabited environments to make informed decisions that will benefit communities through the utilisation of ST (Pereira et al., 2018).

2.8.2 Education

Education is continuously transforming as the concept of ST/SC grows. New challenges on how to extend and interconnect learning services offered through smart education become a concern, as people need to learn new ways of doing things that require a level of technology savviness (Zhu et al., 2016). In addition, challenges in smart learning environments require the adaption of concepts such as educational technology leadership – the technological learning and leadership of teachers.

Elderly citizens interacting with ST/SC services face technological challenges. According to Assante et al. (2019), education and usability challenges for the elderly need to be addressed in order to have an all-inclusive ST/SC experience. The younger generation is already exposed to these technologies. Many services are based on ST, thus making the education of citizens a vital and important aspect. This can be done by changing the way citizens interact with the cities through becoming proactive citizens. They need to learn how to utilise the tools presented by organisations and governments.

Today, educators see ST as a tool to enhance traditional print-based learning patterns as children are being introduced to these technologies in early literacy education. Educational institutions have experienced significant benefits through the utilisation of portable technology devices such as tablets and smart phones. Education is gradually being transformed as more institutions adopt technology in their teaching systems. For instance, due to the Covid-19 pandemic, many institutions have been forced to conduct classes remotely using portable technologies, and restrictions have been put in place to combat the pandemic, such as social distancing that do not allow people to be in close proximity of each other (Heymann & Shindo, 2020). Teachers and students are able to communicate effectively with each other, as teachers can send assignments to students, and in return, students can submit assignments without any physical contact between them (Lynch & Redpath, 2014).

Technology has made education much more efficient even in tough times such as the Covid-19 pandemic. One of the reasons this is possible, is that technology can be adopted quickly and effectively on a larger scale. Unfortunately, not all institutions have adopted or have infrastructure in place to facilitate activities such as online learning. Only the institutions that are forward thinking are able to capitalise on effective and efficient technological experiences in challenges times such as these.

For the educational institutions that have the needed smart learning measures in place, it is 'business as usual', as both their educators and students can move forward with the work at hand (Uskov et al., 2015). Government needs to ensure that policies are in place to support public institutions that are disadvantaged due to poor technological infrastructure or lack thereof. While many of them are benefiting from the abilities and capabilities of ST in the educational arena, many are still struggling to keep up with the learning expectations and demands. This situation causes those without access to such technologies to be at a disadvantage compared to those who have access to these powerful smart learning technologies (Uskov et al., 2017).

The reason government needs to put basic policies in place to support smart technology learning, is because not all institutions are the same and not all have the same amount of resources. However, if merely the basic expectations and requirements for an institution to operate effectively and efficiently are aligned with education continuity, even in disasters such as pandemics, the previously disadvantaged students will also have a fighting chance. The policies should furthermore be in alignment with curriculum frameworks, thus mitigating issues around the lack of essential technology knowledge and skills, and ensuring that everyone affected by the technology (i.e. both educators and students) are sufficiently literate and savvy to use these technologies (Santos & Bocheco, 2020). Because not all students are privileged, these kinds of policies play an important role in equalising the playing field between the *haves* and the *have not's*.

Another important aspect of ST in education is that strict management needs to take place to ensure that the technology resources are only used for learning purposes, and not for watching Netflix and 'chilling'. These management needs and measures should be set up by the institutions themselves. The institutions are responsible for the content offered to students, and they need to measure, not control, the students. Institutions need to ensure that they use smart learning technologies for valid smart learning reasons (Alghamdi, 2019). For instance, in private institutions that provide students with ST devices for learning Internet security, protocols are put in place to ensure that students are not able to access information outside the learning curricula or frameworks. Examples of forbidden activities include visiting pornography websites or playing games on devices that are meant for learning (Santos & Bocheco, 2020).

2.8.3 Energy

Energy inefficiency poses a major challenge, as there is a significant need for the awareness and actions of citizens in lowering energy wastage and inefficiency (Nižetić et al., 2019). Sustainable energy production is a significant challenge as for instance,

ESKOM the power house of South Africa, is struggling to meet the country's energy needs. Therefore, it is important to consider the impact of energy consumption when introducing ST/SC in environments (Luque-Ayala & Marvin, 2019).

A challenge from a smart micro-grid perspective is regulations that might prevent the correct utilisation of micro-grids due to red tape and policies in place. Technical challenges also cause issues, such as the compatibility of components and the integration of renewable energy generation (Yoldaş et al., 2017).

Home energy management systems are becoming more popular due to increased electricity demand. These energy management systems are smart because they can measure and anticipate electricity demand and allocate energy where it is needed the most and reduce energy where it is needed the least. These energy technologies utilise smart metering systems and load controllers (Shareef et al., 2018). Smart energy systems have the capability to monitor electricity consumption and manage consumption schedules in an automated fashion.

Smart home energy management systems have the potential to reduce greenhouse gas emissions and eventually contribute positively towards global warming challenges (Yousefi et al., 2019). Furthermore, energy management technologies have the capability to monitor lighting, electronic appliances and electric vehicles when implemented correctly (Chaudary et al., 2016). ST is aligned to smart energy management technologies, as both are dependent on architecture that is reliant on the Internet and wireless communication technologies such as RFID, Bluetooth and Wi-Fi (Ahuja & Khosla, 2019). For instance, there are buildings known as green buildings due to their ability to save energy consumption while in operation. Green buildings are also known for making use of a combination of technologies such as solar panels and smart sensors to regulate temperatures within and outside the building in order to allocate energy accordingly where needed while saving electricity consumption (Deuble & de Dear, 2012).

2.8.4 Environment

Environmental challenges, which include safeguarding basic human needs such as food, energy and water security, affect the part of the human population that is technologically marginalised. Another challenge is the way technology disconnects humans from nature – due to virtual environments, many humans spend their time inside rather than being out in nature (Colding & Barthel, 2017).

China is an example of the rapid growth of a country with expansion from rural into urban environments, thereby leading to former industrial areas being reformed for

human settlement. This movement holds health risks, as contamination of those areas may create havoc (Inn, 2020). The coronavirus is a good example of this, resulting in a significant environmental challenge to reform those environments for safe habitation. New pollutants are emerging and strategic plans to evaluate and manage the consequences must be created using STs (Di Renzo et al., 2019). Therefore, challenges such as the identification and preparation of comprehensive lists of emerging contaminants and the characterisation of the biological pollutants consequences into ecosystems can be addressed via ST (Gavrilescu et al., 2015).

Another known challenge is the establishment of smart green public spaces, which are not easy to implement because of political, social and economic issues. When implementing smart green spaces, organisations and municipalities should consider the protection of social and ecological sustainability.

2.8.5 Government

The government domain is centred on e-government with challenges such as limited data and information, outdated information technology, legal and regulatory requirements, and environmental and institutional concerns (Gavrilescu et al., 2015). AlEnezi et al. (2018) highlight challenges in relation to IoT and based on governance, which include the process of encouraging organisations to change. Because of the highly regulated nature of administration systems, limited investment in technology and security privacy concerns, it becomes challenging to implement a smart government environment effectively.

STs are becoming quite popular in public sectors while various smart government initiatives are adopted on a global scale. Smart government practises introduce new and efficient ways of working in the public sector (Schedler et al., 2019). ST allows governments to reach their full potential and operate optimally while improving overall service delivery for citizens. Therefore, exploring the adoption of ST within government may be a fruitful exercise. Singapore and Estonia are examples of governments who managed the transition into the digital e-government realm successfully (Brown & Burjanadze, 2020). These countries were successful because of the pro-technology policies their governments managed to put in place. This being said, it is extremely difficult for countries to embrace technology as a whole without the initial support from government.

Smart government initiatives have seen both citizens and governments benefit financially because of reduced time spent on manual efforts and work and which were later replaced with automated smart systems (Chatfield & Reddick, 2019). Cost

benefits as well as an increase in social coherence between governments and citizens can be gained through the adoption of ST (Schedler et al., 2019).

Smart governments have the capability to gather and analyse public data in order to assist public officials and leaders in making informed decisions to the overall benefit of the public. In essence, smart governments, through ST, lead to smarter solutions to complex problems (Guenduez et al., 2020). The backbone of smart governments is supported by STs 'working together' to accomplish the full capacity and potential these technologies have to offer to the public sector. This can be realised through government and private sector collaboration and active citizen engagements. Only when this three-way collaboration is accomplished, will societies begin to see and experience the full potential of STs in action (Harsh & Ichalkaranje, 2015). ST changes how the public sector operates, meaning that public servants too need adequate and required training to manage and utilise these technologies after implementation. The competent use of STs eventually leads to autonomy and sustainability, thus allowing users to focus their time on other tasks that still need human intervention (Anthopoulos et al., 2016).

2.8.6 Healthcare

Healthcare has become a popular topic with regard to ST and health monitoring because of smart health wearable devices. However, this domain is yet to overcome challenges such as bionic smart cloth fabrication, health big data, intra-body area network communication, and the impact of human body interference through contextual data interpretation (Chen et al., 2016). The following main challenges with regard to smart health wearable devices were identified by Mshali et al. (2018:26): "privacy and security, monitoring accuracy, availability, and reliability".

ST allows for effective and swift responses to pandemics as seen with the Covid-19 pandemic. Healthcare facilities use devices such as portable human temperature scanners to identify particular individuals as a possible risk or not (Kummitha, 2020). Countries such as China adopted technology-focused approaches to identify virus symptoms as an aid to assist the healthcare sector. Other countries quickly followed suit as they began to see the need to rapidly scan and identify potential contaminations. Data for the pandemic are being tracked and monitored through big data and analytics cloud technologies, which also fall into the ST category (Albini et al., 2019).

Pandemics are known to affect a large portion of the human population because of the ability to quickly increase and spread while infecting millions of people across the

world and killing many (Chávez et al., 2020). The Covid-19 pandemic is the latest to hit the world and it has a significant impact on global economies, organisations and Individuals around the world (Ji et al., 2020). Covid-19 was declared a pandemic by the World Health Organisation (WHO), which plays the role of advising global leaders on how to best manage the spread in their respective countries and organisations (Heymann & Shindo, 2020).

As STs are widely being adopted, they have the potential to play a significant role in managing the pandemic through various technologies such as smart sensors that monitor human temperatures. Cloud technologies have the ability to scale solutions (Mora et al., 2017). Many governments deploy, adopt and make use of these technologies to manage the pandemic better, not only in the health care industry but also in social settings. The vast amounts of data being collected through the tracking and tracing of infected individuals during the pandemic are significant due to the capabilities of technology-driven devices (Bannister & Connolly, 2020). Devices such as smart phones contribute towards the management efforts of the virus. The South African government for instance, along with telecommunication organisations, have embarked on an effort to trace individuals infected with the virus and the locations they move to. Countries not utilising technology to manage the spread of the pandemic or gaining data insights have a reduced ability to make informed and calculated decisions regarding the pandemic. These countries are labelled to be taking a human-driven approach rather than a technology-guided approach (Kummitha, 2020).

Technology-guided approaches focus on scalability and efficiency to predict and forecast a better way forward with the data attained (Janssen et al., 2019). Informative data assist healthcare environments with defining and structuring productive healthcare systems, as they depend on technology to solve problems (Kim et al., 2015). In return, ST capabilities enhance social and human capital among citizens to serve healthcare organisations better, as they are service-based by nature and design. Through the collaboration of various stakeholders where governments adopt a technology-driven approach, the pandemic is better controlled compared to governments that make use of a human-driven approach. In China, the government put infrastructure in place to manage the pandemic through IoT devices and 5G networks, which helped them to characterise and isolate the contaminated individuals better (Kummitha, 2020).

2.8.7 Security

Security is another major factor that plays a role in the adoption of ST/SC, mainly because of the significant problems relating to privacy and accessibility of stored data (Farahat et al., 2019). For example, a GPS can track and record information on a person's daily schedule or residential location, contact lists, and communications, such as personal emails and chats (Elmaghraby & Losavio, 2014). Additional challenges have been identified. These challenges include (Zhang et al., 2017:122):

- i) Crowd sensing, "using sensing devices of local residents" that require the motivation of citizens to participate while taking their privacy into consideration;
- ii) the recognition of false data injections;
- iii) new data privacy policies;
- iv) availability;
- v) management as governments; and
- vi) the need for SOOs to keep up with the rapid evolving rate of technology.

Smart objects are increasing in private households, which in turn increase the potential of invasion of privacy (Wodjao, 2020). Many end users trade off tracking in exchange for functionality and user convenience (Zomet & Urbach, 2019). Today, privacy protection is not a binary decision (either use a product or not), as privacy concerns accompany the majority of STs. Therefore, ST users need to be mindful of the effect of functionality and convenience in their day-to-day lives. Ultimately, even though convenience is a major factor for the benefit of deploying ST, many users do not particularly mind that smart technologies collect, track and monitor their personal information (Zomet & Urbach, 2019).

Research has revealed that technology users differ in their perspectives on confidentiality regarding the management of their personal data. In many cases, their perspective towards data collection is heightened (Malkin et al., 2019). The amount of information gathering a user is willing to accept is reliant on the knowledge limitations regarding the usefulness of that information. Based on the nature of data tracking technology, users are concerned about their personal data, the way it is collected by organisations, among others, and what it will ultimately be used for. [Figure 2.4](#) shows the perceived convenience benchmarked against the privacy threat of categories of smart devices in private households. Ultimately, distrust of ST results in a negative outlook towards tracking, and therefore limits a user's intention of use ST (Yang et al., 2019).

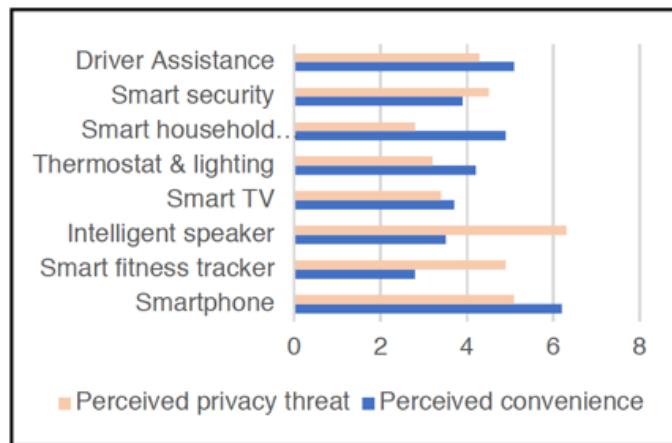


Figure 2.4: Perceived convenience and privacy threat of categories of smart devices in private households (adopted from Princi & Krämer, 2020:4)

2.9 Innovation in logistics

Innovation in logistics has improved at an exponential rate. STs have almost revolutionised the industry to what we know as Industry 4.0 (Figure 2.5).

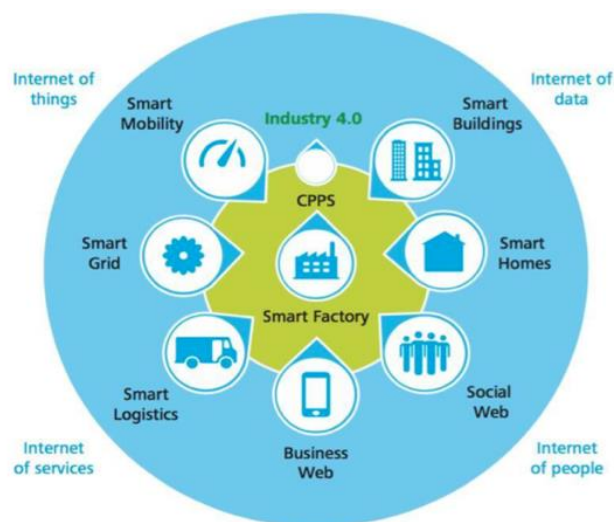


Figure 2.5: Industry 4.0 environment (adopted from Galindo, 2016:98)

The 4th Industrial Revolution is based on automated-driven systems with the purpose of enabling smart and intelligent production of things that interact with one another while allowing humans to accelerate decision making (Akkaya & Kaya, 2015). Technological innovations have restructured the logistics processes to focus on profitability and competitive advantage while equally achieving sustainable growth (Galindo, 2016).

Logistic processes have been restructured due to Industry 4.0, which begun to affect the future of the logistics industry with the implementation of ST. The concept of

Logistics 4.0 was born to progress automation, standardisation and reduced human labour with the evolution of ST in logistics (Galindo, 2016).

Logistics 4.0 (Figure 2.6) consists of several focus points: “Integrated logistics planning and implementation, intelligent storage, autonomous and B2C logistics, logistics analytics and intelligent logistics” (Galindo, 2016:98). All the points are interrelated and pivotal for digital transformation. A number of these technologies utilised in the logistics change processes do not require human operation. In Logistics 4.0, the objective is to maintain equilibrium between automation and mechanisation (Galindo, 2016). Industry 4.0 consists of autonomous automation systems, for example AI and Robotics Process Automation (RPA).

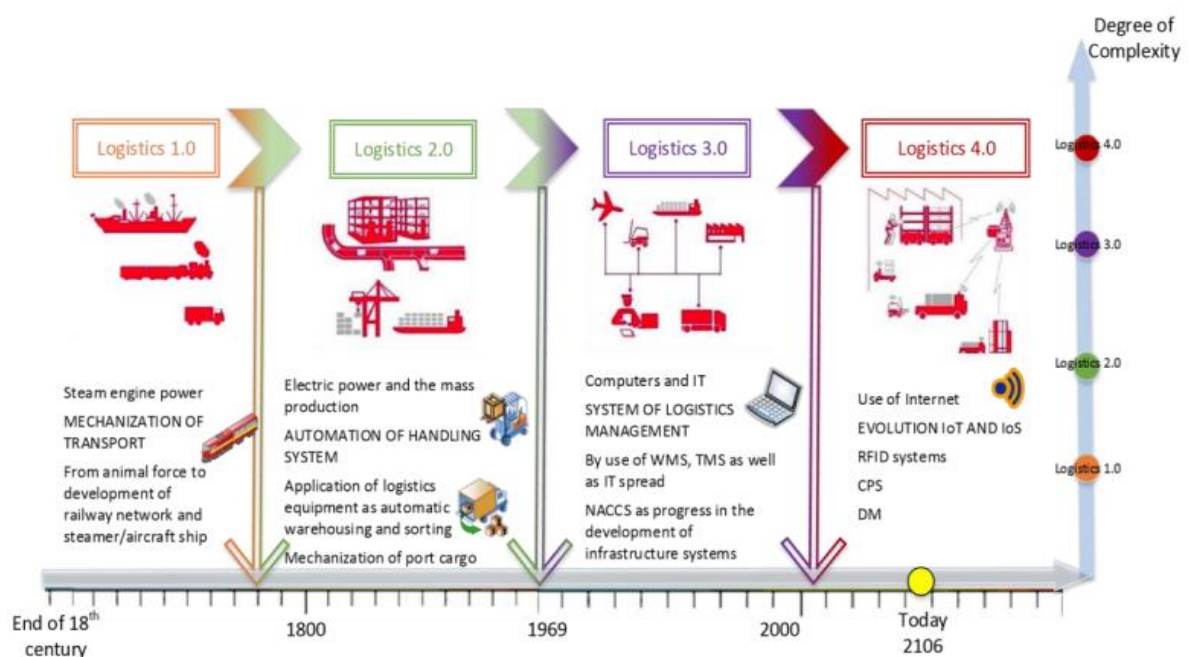


Figure 2.6: Evolution in Logistics 4.0 (adopted from Galindo, 2016:99)

Smart logistics, i.e. Logistics 4.0, is defined as a “new logistics system where flexibility increases much more, adaptation to market changes increases, costs decrease and customer needs are met most and quickly” (Şekkeli & Bakan, 2018).

Another definition by Timm and Lorig (2015:99) is that “Logistics 4.0 consists of autonomous subsystems where the behaviour of individual actors depends on other actors”. These autonomous systems interact with each other, both to achieve their individual goals and to ensure that the parties concerned achieve their goals. As a result, technologies such as robots and automatic machines are replacing processes requiring operation and determination by human labour (Figure 2.7).

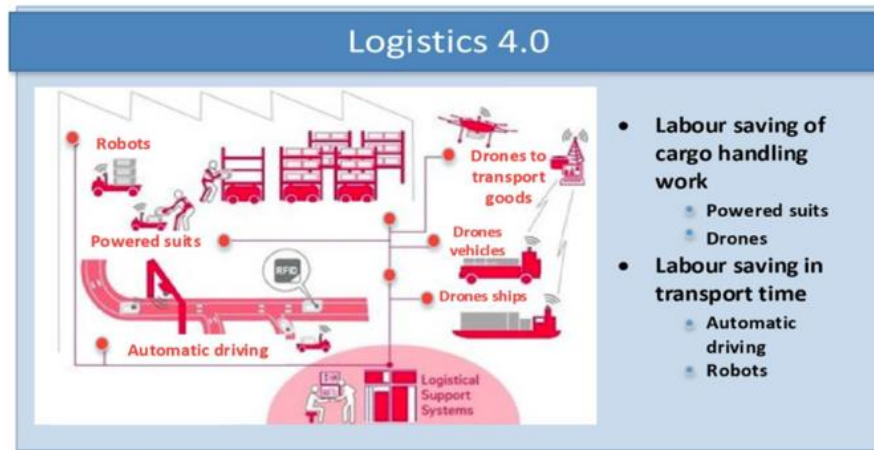


Figure 2.7: Technology involved in Logistics 4.0 (adopted from Galindo, 2016:100)

A list of technologies used within Logistics 4.0 is presented in Table 2.5. Logistics enterprises spend money on research and develop different models and technologies for their operations. Amazon with its drone delivery system is such an example. Research and development are done because innovative technological approaches advance the aim of improving logistics operations and functions while accelerating and reducing operational costs.

Table 2.5: Technologies used with Logistics 4.0 (adopted from Akkaya & Kaya, 2015:100)

Technologies used within Logistics 4.0	Internet of Things
	Wearable Technology
	Cloud Technology
	Blockchain
	Big Data
	Augmented Reality
	Robot Technologies and Automation, Autonomous vehicles
	Aerial Vehicles (Drone)
	3D Printing
	Simulation and Digital Identifiers

2.9.1 Sustainability

Strategic evaluation is required to manage the sustainability challenges of ST/SC as well as assisting and defining priorities (Ahvenniemi et al., 2017). Challenges include mitigating the effect of technology in the improvement of infrastructure, as this is accompanied by a deterioration of ecosystems (Sánchez-Corcuera et al., 2019). The monopolisation of systems created by large organisations may harm the sustainability of environments. Environments managed by small initiatives are finding it difficult and

challenging to take themselves to the next level in order to create a big change. There is also the challenge of increasing technology knowledge for citizens, organisations, governments and various environments, thus contributing to the complexity of sustainability challenges (Sánchez-Corcuera et al., 2019).

2.9.2 Technology and its impact on inclusion/exclusion in the smart city

Today, technology plays a more important role in our cities than ever before in history, as technology is becoming the architect of our interactions with each other as well as the organisations within our society (Turkle, 2017). Governments are setting up platforms that enable private sector organisations such as Google and Amazon to innovate and service society as a whole. Through innovative platforms and technology solutions, governments can tend to lean towards personalised connections with citizens. This then allows for plug and play smart city environments for citizens and end users (Desouza & Bhagwatwar, 2014). Ever-increasing pressure is placed on governments to look into their policies when it comes to technology in order to reduce costs and produce economic low hanging fruit for their societies.

The 2018 Coalition for Digital Rights (Calzada & Almirall, 2020) is an example of how leadership can affect human rights and open government frameworks on smart city platforms. If governments follow the correct Digital Rights Frameworks, for example, they would be able to monitor how data are used to make informed decisions to the benefit of its citizens. For instance, when a sensor is used to monitor bicycle traffic, government can better determine who is on a bicycle in a particular location. This could give governments insight into managing traffic more effectively, and even add bicycle lanes where needed. This principle can be applied broadly with the correct utilisation of ST to improve government efforts.

2.10 Structure of concepts and systems

Figure 2.8 shows the structure and relations between the ‘Smart City’ and ‘Safe City’ concepts, along with their mutual systems and respective layers previously published in “Concept Safe City and system of Smart Safety and Smart Healthcare” (Ristvej et al., 2020).

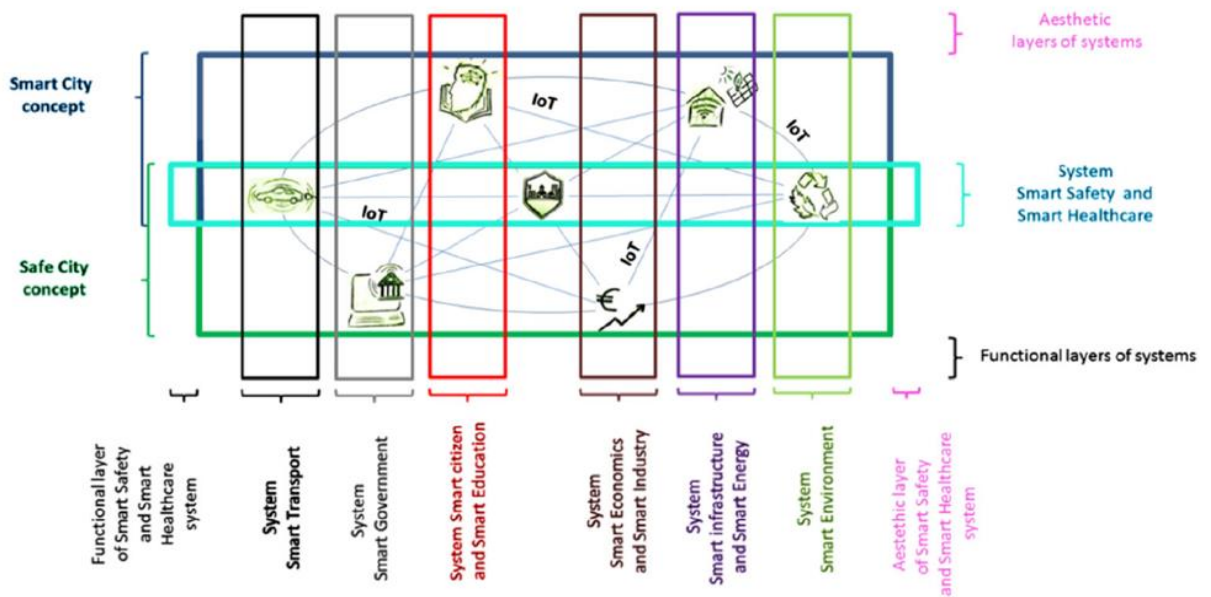


Figure 2.8: City structure and relations between the 'Smart City' and 'Safe City' concepts, their common systems and separate layers (adopted from Ristvej et al., 2020:2)

2.10.1 Advantages of smart technologies

The adoption of ST depends on organisations and customers seeing and experiencing rich gains from the technologies along with the consideration of potential risks. However, it is also important for government to put in place policies that support ST adoption (Kankanhalli et al., 2019), such as policies that touch on security, affordability and operational measures, which correlate with information and confidentiality. There are various advantages for ST early adopters. High innovation awareness, which implies that organisations or customers take on the technologies at an early stage, will have increased insight and knowledge into STs (Wilson et al., 2017). These organisations or customers will be able to take advantage of the innovative technologies and use them to their full benefit before they become widely available in the general marketplace. Two important advantages that early ST adopters (organisations or customers) will have access to are increased wealth and exposure to many social networks, because they will be at the forefront of ST, conceptualising opportunities before others in order to enrich themselves and those within their social networks (Wilson et al., 2017).

Being less susceptible to market and interpersonal influences are also advantages for early ST adopters, as organisations and customers will have in-depth knowledge of these technologies regarding the *do's* and *don'ts* (Kamble et al., 2019). They will not be taken advantage of easily by organisations or people who think they can 'pull a fast one' because of their limited knowledge of the technologies. An example of taking advantage of the customer is consultants who charge too high prices or who oversell

technologies of no benefit to organisations. Manageability of adoption risks is another advantage for early ST adopters, as they will have oversight of the technological expectations and be able to mitigate and address technological risks (Wilson et al., 2017). STs have been known to benefit users in multiple ways (Wilson et al., 2017:72), including: i) saving time, money and energy, and increasing reliability and credibility.

STs have also been known to increase comfort, which is a benefit to organisations and consumers. An example of this is the ability of a consumer to monitor and manage their household remotely without physically being on the premises (Garcia et al., 2019). Consumers are able to provide access to family members by unlocking doors remotely, and they can see who is in which room doing what. Customers can also remotely switch lights on and off when needed. These are examples of how ST can play a positive role in the luxury and comfort space. These opportunities have led companies such as Google, Amazon and IKEA to invest significantly in STs for the benefit of their consumers (Garcia et al., 2019). This being said, STs do have limitations in the leisure industry, as not every organisation can afford to produce and supply them and not every consumer can afford them. The barrier to entry for these technologies and services is high and government needs to play its part in levelling the playing field through policies that will also be of advantage to the smaller companies and low-end consumers (Kansakar et al., 2019).

As the world is going through the Covid-19 pandemic, many organisations have to shut down and many people are confined to their homes (World Health Organisation, 2020). However, ST still proves to be advantageous to organisations and people utilising them. For instance, remote and mobile gamification experiences allow users to travel to destinations remotely through VR technology, which is a type of ST. This type ST has opened up a new sector or industry for digital tourism, which again is a benefit, as people are confined to their homes but they can still experience travel in a digital manner.

ST can create advantageous ways of information management flow for both consumers and organisations, thereby resulting in the improvement of knowledge management, which can then improve operational and social performance (Nisar et al., 2019). The growth of ST within organisations is exponential in nature due to the benefits of knowledge management, as ST encourages information exchange and communication through insightful data and analytics. Rich and advantageous information can be derived from ST, helping organisations with making smarter and more informed decisions (Ardito et al., 2019). ST can affect organisational and

personal performance positively when implemented and adopted correctly (Nisar et al., 2019).

In the e-Learning space, ST has shown to be valuable to educators and students alike due to innovative learning strategies. Leading institutions are known to utilise ST for the benefit of their students in trends such as remote, game-based and robotics-based learning. All these types of learning have to make use of technology to be successful, and they need to be smart in doing so (Uskov et al., 2018). For instance, remote learning allows students and teachers to “remotely conduct class through a combination of cloud, video and physical devices which is essentially the definition of a smart technology” (Immonen & Sintonen, 2015:589). Game-based learning enables students to learn through a gamification-based approach, where students are playing a game of sorts while actually learning at the same time. Artificial reality and simulations are examples of this type of ST. A pilot of an airline can for example enhance his flying skills through an artificial simulator at organisations such as NASA and Boeing (Röfing et al., 2019). Finally, robotics-based learning comprises actual robots or bots that teach students pre-programmed information. Robotics-based learning is popular in Japan, where, for instance, actual robots teach in technical classrooms full of students (Louw & Deacon, 2020).

STs are known to be advantageous in many sectors, from manufacturing to education, transport, finance and medicine. As much as this is true, organisations and consumers need to always be cognitive of the impact these technologies have on their day-to-day lives. Overreliance on these technologies may become counterproductive if not managed correctly.

Mozambique is an example of a country that has benefited from smart agriculture technologies in the agriculture sector (Chichongue et al., 2020). The country experimented with smart agriculture technology, specifically a soil-and-crop management system that increased soil quality while reducing the negative effects of climate variability. The experiment was successful, as it showed an increased production of maize and beans. This was in contrast to the traditional way of farming without the implementation of smart agriculture technologies (Thierfelder et al., 2016).

2.11 Summary

The evolution and progression of ST is evident within smart Initiatives such as smart cities, smart vehicles, and eventually, ‘smart everything’. It seems the world is looking forward to a smart future. The literature review has been conducted based on concepts and keywords derived from the research title, problem statement, research

questions and aim of the study. Various significant challenges within particular domains have been discussed in this chapter to provide readers with insightful context and clarity on the subject matter. Among these, domain challenges were included, which aligned with ST, taxonomy for SC challenges, and ST challenges faced by SOOs. The advantages of ST were covered, which are important factors in driving the adoption of ST within various environments (Ardito et al., 2019). These advantages include the ability of ST helping organisations make smarter and more informed decisions, as well as the innovative and learning strategies brought through ST into the e-learning space (Nisar et al., 2019).

CHAPTER THREE: RESEARCH METHODOLOGY



Figure 3.1: Chapter Three layout

3.1 Introduction

The research philosophy is the first layer of the research onion as presented by Saunders et al. (2007), which is the initial stage of the research design for this study (Figure 3.1 & Figure 3.2). The philosophy leads to the second stage, known as the research approach, where an inductive approach was applied for this research. The third stage contains the research methodology where a mono-qualitative method was adopted. The fourth stage shows the research strategy, and for this particular research, a multiple case study strategy with interviews was chosen. The fifth layer of the onion identifies the research time horizon (cross-sectional for this study), and finally, the last stage presents the data collection, analysis techniques and procedures.

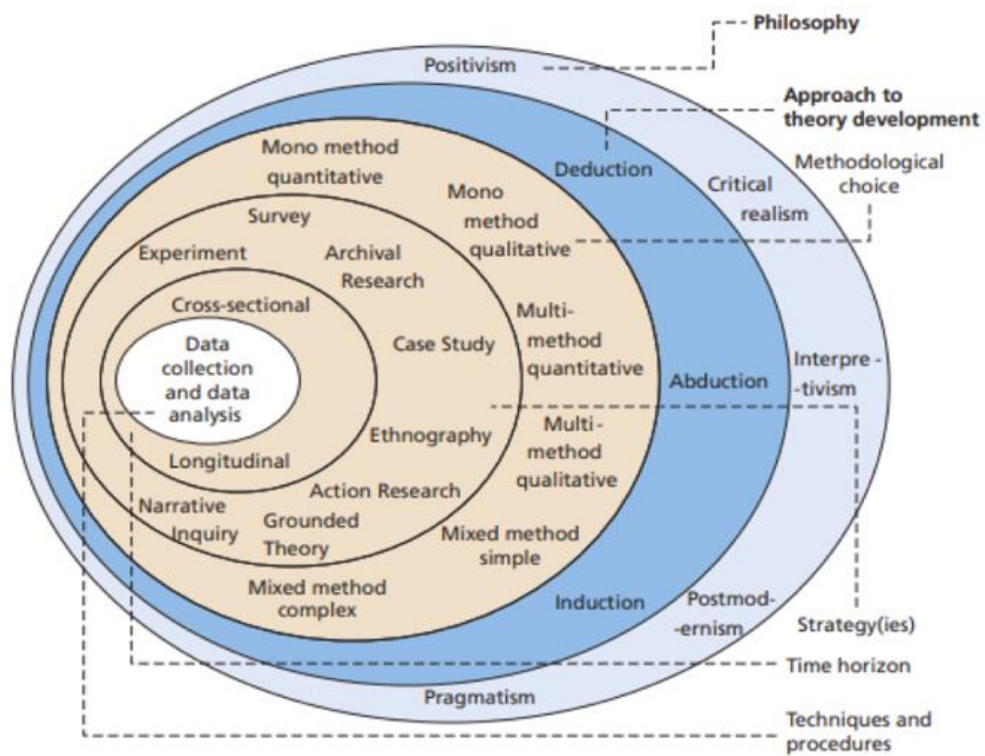


Figure 3.2: The Research Onion (adopted from Saunders et al., 2019:130)

This chapter is structured as follows: i) research philosophy; ii) research strategy; iv) sampling; v) data collection; vi) data analysis; vii) ethics; viii) and the chapter summary.

3.2 Research philosophy

The philosophy describes the researcher's stance in terms of the how the research was conducted. A subjective, interpretive philosophy was followed for this study. Subjectivism and interpretivism are elements of ontology (all that is or exists) and epistemology (what is known to be true), respectively (Scotland, 2012). Interpretivism

is centred on understanding human nature and the varying roles of social actors by interpreting the psychological strategies undertaken by social actors. It enables the probing of answers from the interviewees in order to add context to their responses, while adding significance and depth to the data (Saunders et al., 2007). In sections 3.2.1 and 3.2.2, subjectivism and interpretivism are discussed (Figure 3.3).

Assumption type	Questions	Continua with two sets of extremes		
		Objectivism	↔	Subjectivism
Ontology	• What is the nature of reality?	Real	↔	Nominal/decided by convention
	• What is the world like?	External	↔	Socially constructed
	• For example:	One true reality (universalism)	↔	Multiple realities (relativism)
	– What are organisations like?	Granular (things)	↔	Flowing (processes)
	– What is it like being in organisations?	Order	↔	Chaos
Epistemology	• How can we know what we know?	Adopt assumptions of the natural scientist	↔	Adopt the assumptions of the arts and humanities
	• What is considered acceptable knowledge?	Facts	↔	Opinions
	• What constitutes good-quality data?	Numbers	↔	Narratives
	• What kinds of contribution to knowledge can be made?	Observable phenomena	↔	Attributed meanings
		Law-like generalisations	↔	Individuals and contexts, specifics

Figure 3.3: Philosophical assumptions as a multidimensional set of continuation (adopted from Teddlie & Tashakkori, 2010:32)

3.2.1 Ontology

Ontology is the study of “existence through studying and determining how and if things exist or not” (Brown, 2017:215). The study classifies existence by attempting to select abstract things and then determining what they are. Ontology is a part of “metaphysics, a domain of philosophy which examines the nature of things, their being, cause and identity” (Ulmer, 2017:201). This approach is important for the research, as the researcher attempted to study and determine the nature of ST and the way it exists in an operational environment. Ontology encapsulates subjectivism and objectivism.

3.2.1.1 Objectivism

The objectivist approach is focused on social research, developed from the natural sciences, where social science researchers apply successful methods of the natural sciences to investigate social science phenomena (Holden & Lynch, 2004).

3.2.1.2 Subjectivism

The subjectivist approach was chosen for this particular research, as the nature of the collected data was unstructured and qualitative, and therefore non-numerical by nature, rather than quantitative, which is numerical. Subjectivism was also chosen because the research was taking on an interpretivist nature, with the data obtained from the participants being interpreted rather than being of an experimentalist nature, which is an objectivist approach (Holden & Lynch, 2004).

3.2.2 Epistemology

Epistemology refers to the philosophical study of the origin, the limits of human knowledge and nature. Epistemology stems from the Greek word “episteme”, meaning “knowledge”, and “logos”, meaning, roughly, “study, or science, of”. “Logos” is the root of all terms ending in “-ology” – such as psychology, anthropology – and of “logic”, and has many other related meanings (Kelly, 2016). Epistemology generally does not focus on procedural or acquaintance knowledge, but rather prefers to focus on *propositional knowledge*. A proposition is something that can be expressed by a declarative sentence, and which purports to describe statements and facts (Foucault, 2019). There are two stances available to the researcher, namely a positivist and interpretivist stance.

3.2.2.1 Positivism

Positivism focuses on discovering the laws that manage the physical world, making it a quantitative method (Weber, 2004). The quantitative nature of the method is the reason it was not used for this study.

3.2.2.2 Interpretivism

Epistemology refers to researchers interpreting elements of a study, by integrating human awareness into a study (Rosenberg, 2017). The interpretivist approach is social and appreciates differences among people (Packard, 2017). Interpretive researchers assume that access to reality is only through social constructions such as language, consciousness, shared meanings, and instruments. Interpretivists assume that reality can be fully understood through the subjective interpretation of reality (Harrison et al., 2017). This approach was vital to the study, as it probed answers from the relevant subject matter interviewees. The study adopted an interpretivist epistemological approach, as the researcher was actively interpreting data collected from an interviewee perspective to make a case about the truth, since there are many ways of examining and discussing experiences (Harrison et al., 2017).

3.3 Research strategy

A multiple case study was used as research strategy (Saunders et al., 2007). Twelve organisations were used as cases.

3.3.1 Multiple case study

Multiple case studies (MCSs) are distinguished as one of the methods to conduct research and are used to determine the “why” and “how” questions in the study (Harrison et al., 2017). Case studies are appropriate for various types of studies when implemented correctly. Case studies are important due to their capability to satisfy the need for relevance in research where research findings can be applied in practice (Baxter & Jack, 2008). Ultimately, as a result of MCS research, the researcher becomes part of the world of practice, even if the researcher’s role is only that of an observer. Researchers can “capture the knowledge of practitioners to develop theories from it” (Harrison et al., 2017:53).

The researcher adopted an exploratory approach because the intention was not to propose a solution in order to address the research problem, but rather to present insight and richer understanding into the problem statement (Saunders et al., 2007). The MCS consisted of 12 cases. The cases ([section 4.2](#); [Table 4.1](#)) were selected non-randomly, purposively and conveniently. In accordance with the selection criteria, the 12 cases implemented and used STs already prior to the study.

3.3.2 Unit of analysis

The source from which a researcher acquires data and information is known as the unit of analysis. In other words, the unit of analysis is the sample drawn from the population (Harrison et al., 2017). For this study, the unit of analysis was defined as the 12 organisations using STs. The study explored the unit of analysis by comparing the 12 SOOs, thereby investigating the analysis from an organisational perspective. The organisations had comparable units, as they were all service-based by nature with defined IT strategies (Boud et al., 2018).

3.3.3 Unit of observation

The study used individuals selected from the 12 organisations (unit of observation) to collect information. Interviews and surveys were conducted with relevant managers and experts from the 12 organisations to elicit and collect the required data (Ary et al., 2018). The participants were the unit of observation, which comprised of 14 participants selected from the 12 SOOs. The participants ([Table 4.2](#)) included: Managing Director, two Innovation and Insights Leaders, two Heads of Product, Chief Operations Officer, Operations Manager, Smart Real Estate Leader, Technical

Leader, Business Unit Manager, Business Analysis Application Delivery Manager, Enterprise Application Head, Chief Technology Officer, and Delivery Consultant.

3.4 Sampling

A research sample is the portion of a population that is chosen for a study or investigation. The sample size and the method of selection influence and establish the reliability of the study results (Taherdoost, 2016). The sampling was conducted in a non-random, purposive and convenient manner. A qualitative research approach was adopted for this study, which made the characteristics of the sample vital and impartial to the study (Taherdoost, 2016). The 14 participants all indicated that they have 10+ years of experience in the ICT industry, and all of them occupied a strategic role in their company at the time of the study (see [section 4.3](#), [Table 4.2](#) for further analysis).

3.5 Data collection

The data were collected by means of one-on-one, face-to-face interviews with the 14 participants, along with semi-structured interview guided by an interview guide ([Appendix C](#)). The data collected from the 14 participants were recorded and transcribed. The transcriptions ([Appendix D1-D14](#)) were handed back to the participants for validation and confirmation of the correctness thereof). Written as well as verbal (recorded) permission to record the interviews was obtained from each of the interviewees (Saunders et al., 2007).

All participants were briefed on the ethics to be followed throughout the course of the data collection procedure ([Appendix C](#)). Permission to conduct research was requested from each of the 12 SOO's top management. Once approval was received, participants were contacted through email to inform them of the research and request if they would be willing to take part in the research. Each of the 14 participants was required to sign an individual consent form ([Appendix A](#)) (Green & Thorogood, 2018).

3.6 Data analysis

For this study, a qualitative data analysis was performed (Yang et al., 2018). The purpose of the data analysis was to deconstruct the collected data into smaller pieces in order to gain useful information for the study (Baxter & Jack, 2008). The collected data were coded, keywords were identified, summarised, and categorised, and then a thematic analysis was performed using an Excel spreadsheet ([Figure 4.3](#) & [Figure 4.4](#); [Table 4.7](#) & [Appendix E](#)).

3.7 Ethics

Resnik, Elliott and Miller (2015:475) define ethics as the “norms of conduct that distinguish between acceptable and unacceptable behaviour”. Ethical principles include honesty, informed consent and permission, and ensuring that the rules to prevent plagiarism are strictly adhered to. The 14 participants were briefed prior to conducting the interviews. The participants were informed that should they feel uncomfortable in any way due to the nature of the questions, they are not obliged to answer the question and have the freedom to withdraw their answers whenever they feel the need to do so. Participants were briefed on the research ethics indicated below and which the researcher adhered to namely: i) minimising the risk of harm; ii) obtaining informed consent ([Appendix A](#)); iii) protecting anonymity and confidentiality (all participants and SOOs were given a code in order to avoid identification); iv) avoiding deceptive practices and principles (all principles were declared before the interview started); and finally, v) the right to withdraw at any time (Orb et al., 2001:93).

In the process of this research, various ethical principles were considered and the needed consent was obtained from participants and their respective organisations ([Appendix A](#)) for data collection purposes. Even though the researcher obtained consent from the various organisations and their participants, no data will be published without the relevant organisation’s permission. The data and information collected during the literature review as well as the data collected and recorded during the collection process had not been falsified or fabricated and are a true reflection of everyone involved. Furthermore, all contributors, researchers and authors are recognised correctly and ethically.

3.8 Summary

The research methodology in this chapter clearly set out how the research process was carried out, the methods applied during the research process, and how knowledge was gained. The research philosophy, research approach, research strategy, unit of analysis, unit of observation, data collection approach, data analysis, ethics, delineation, and contribution of the research were discussed. A subjective ontological stance was adopted, as each research participant had a distinct opinion of the phenomenon under investigation. An Interpretivist epistemological stance was adopted, as there were various ways of looking at the phenomena that were explored.

The researcher adopted a multiple case study strategy. Non-random and relevant samples were used, comprising of 14 participants from 12 SOOs. The sample was based on the full cooperation of the participants. Non-random, purposive and

convenience sampling was conducted. Consent was obtained from an ethical perspective from the respective SOOs. The data were collected through interviews carried out via semi-structured interview. Once all data were collected from the 14 participants, it was analysed. The analysis was done by summarising the keywords and key concepts, then categorising them and finally doing a thematic analysis.

The researcher made use of qualitative content analysis, as data were in the form of words. All data collected were reviewed, consolidated, and characterised to present a better understanding of the information and the development of themes.

CHAPTER FOUR: ANALYSIS AND FINDINGS



Figure 4.1: Chapter Four layout

4.1 Introduction

This chapter encompasses the analysis and results of the case used in the research (Figure 4.1). This chapter elaborates on the interviews conducted during the research process and the findings formulated based on the analysis of the 14 participants. For

the reader's convenience the problem statement, research questions and aim of the study are once again stated.

Problem statement

Despite the availability of sophisticated technologies such as smart technology (ST), organisations are finding it challenging to influence effective and efficient service delivery transformation through these technologies.

Research questions

RQ1: What are the factors affecting the adoption of smart technology for service delivery in organisations?

RQ2: How can smart technology influence customer satisfaction within service-orientated organisations?

Aim of the study

The aim of the study is to explore the influence of smart technology in transforming service delivery environments.

4.2 The multiple cases

Twelve (12) SOOs were used in the study. The SOOs were specifically chosen for their expertise in the ST industry. [Table 4.1](#) presents the SOO, the size in terms of number of employees, the specific industry(s) the SOOs is serving, and what type of ST the SOO uses and implements.

Table 4.1: Description of the SOOs who participated in the study

SOO	Size of SOO	Industry	Smart technologies in use
1	201-500 employees	Technology/ Consultancy	Various types/ Limited disclosure available
2	11-50 employees	Technology/ Consultancy	Various types/ Limited disclosure available
3	11-50 employees	Technology/ Consultancy	Various types/ Limited disclosure available
4	50-191 employees	Technology/ Consultancy	Various types/ Limited disclosure available
5	51-200 employees	Technology/ Consultancy	Various types/ Limited disclosure available
6	51-200 employees	Technology/ Consultancy	Various types/ Limited disclosure available
7	312,000 (2019) employees	Technology/ Consultancy	Various types/ Limited disclosure available
8	51-200 employees	Technology/ Consultancy	Various types/ Limited disclosure available
9	51-200 employees	Technology/ Consultancy	Various types/ Limited disclosure available
10	1001-5000 employees	Brewing/ Beverage/ Technology	Various types/ Limited disclosure available

11	201-500 employees	Technology/ Consultancy	Various types/ Limited disclosure available
12	10,001+ employees	Technology/ Consultancy	Various types/ Limited disclosure available

The size of the SOOs ranges from 11 to 312,000 employees. They service various industries ranging from finance to consulting.

4.3 The participants

Twelve (12) organisations with fourteen (14) participants were interviewed in order to answer the research questions (Table 1.1). Nine (9) organisations are in Johannesburg and three (3) are in Cape Town. Of the twelve (12) organisations, nine (9) have a national footprint and three (3) are located in Cape Town. The SOOs, participants, roles of the participants in SOOs, and years of experience in technology are presented in Table 4.2.

Table 4.2: SOOs, participants, roles of participants in SOOs and total years of experience

Code	Organisation	Role	Years of experience
P1	NEXTEC (Chase Solutions)	Managing Director	10+
P2	Organisation X	Innovation & Insights Leader	10+
P3	Organisation X	Innovation & Insights Leader	10+
P4	Yoco	Head of Product	10+
P5	FEDGROUP	Chief Operations Officer	10+
P6	FEDGROUP	Operations Manager	10+
P7	Deloitte	Smart Real Estate Leader	10+
P8	Synthesis	Technical Leader	10+
P9	TTRO	Head of Product	10+
P10	IOCO	Business Unit Manager	10+
P11	DXC	BA Application Delivery Manager	10+
P12	Distell	Enterprise Applications Head	10+
P13	Kurtosys	Chief Technology Officer	10+
P14	TCS	Delivery Consultant	10+

Each of the participants has more than 10 years of experience in the technology industry. The participants have been strategically selected for their wide range of experience and knowledge on the subject matter. The participants included: Managing Director, two Innovation and Insights Leaders, two Heads of Product, iv) Chief Operations Officer, Operations Manager, Smart Real Estate Leader, Technical

Leader, Business Unit Manager, Business Analysis Application Delivery manager, Enterprise Application Head, Chief Technology Officer, and Delivery Consultant. The participants have all given consent for the interviews and data collection for this research study ([Appendix A](#)).

4.4 Analysis

The transcribed interviews were read several times. An example of an extract from the transcribed interviews is shown in [Figure 4.2](#) ([Appendix D1-D14](#)).

APPENDIX D1: INTERVIEW TRANSCRIPTION P1
What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?
<p>Me: What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?</p> <p>P1: Economic - the reason I would say that it essentially defines the parameters within which you need to operate. An economic factor is important because it is based upon what your criteria for success will be.</p> <p>Me: Ok</p> <p>P1: Why I say I favour that instead of technological factors is because technology changes so rapidly, the deployment of a single technology 6 months later is bound to be redundant; so to chase technology often you will land up overcompensating.</p>
Do you think political factors can influence the deployment of smart technology within service-oriented organisations?
<p>Me: Do you think political factors can influence the deployment of smart technology within service-oriented organisations?</p> <p>P1: Yes, the Huawei thing was quite an extraordinary situation, where politics is heavy handily leaning into the private sector; no one would have predicted that, but I would say on a governmental level they could reference on a basis of governance and protection of personal information.</p> <p>Me: Ok</p> <p>P1: Internal policy is very much on the same base – how and where information is being stored. Is it secured? Can it be compromised? How we manage information.</p>
Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?
<p>Me: Do you think smart technologies have the potential to address and improve service delivery problems within service-oriented organisations?</p> <p>P1: So yes I think ST has potential to improve service delivery on the basis that they can impact process efficiency very accurately. They can allow for an accurate measure of performance over time of individuals and processes as well and allow for two-way communication between people on the ground and the organisations and processes that define them so that these processes can be diagnosed as performance and suitability and the life cycle of their project.</p> <p>Me: Thanks for that very insightful answer.</p>

Figure 4.2: An example of a transcribed interview

After having read the transcriptions, keywords and key concepts were identified. The findings were then summarised ([Figure 4.3](#)).

Participant 1	Participant 5	Participant 11	Summary
<p>Response</p> <p>Economic the reason I would say that, it essentially defines the parameters within which you need to operate.</p> <p>An economic factor is important because it is based upon what your criteria for success will be.</p> <p>Why I say I favor that instead of technological factors is because technology changes so rapidly the deployment of a single technology 6 months later is bound to be redundant so to chase technology often you will land up over compensating.</p>	<p>Response</p> <p>Economic factors apply to everything even in the first question what did I bring up what are the costs the economic factors apply to any business.</p> <p>Technology itself might have a big economic impact that's the reason why you are going to have to have these armies of people around to train people deal with bangs to be able to deal with the unexpected side effects.</p> <p>I would say technology factors is what's driving it economic factors is what determines the speed.</p>	<p>Response</p> <p>I think they go hand in hand but I think as time goes on the technological factors in many ways take precedence over the economic factors because as you move along the disruption curve as eventually the technology itself becomes demonized and democratized.</p> <p>Looking at the economic factors and saying that we can't possibly behave because of the economic factors is going at a pace regardless of what is happening in the economy.</p>	<p>Summary</p> <p>Economic factors define operational parameters within which to operate economic factors is important because it is based upon what your criteria for success will be. Another reason why economic factors are favored instead of technological factors is because technology changes so rapidly the deployment of a single technology 6 months later is bound to be redundant so to chase technology often you will land up over compensating. Within service oriented organisations economic factors can be such a prohibitor or can be prohibiting change and progress in a technical space immensely because of financial restrictions. Economic factors again because a struggling economy will find it more difficult to apply resources that are necessary for the development of smart technology that is required for scaling the operations for any organisations as there is enough technology to go around I mean technology changes every single day there is no shortage of technology but their certainty are economic factors that will effect or have a negative effect to the deployment of smart tech. We should also talk about social economic factors you know where we have labor unions and this becomes a major issue because you want things to run better and monitoring personal therefore economic factors apply to everything and to any business.</p> <p>Technology itself might have a big economic impact that's the reason why we are doing it until that's in place you are going to have to have these armies of people around to train people deal with bangs and to be able to deal with the unexpected side effects in this respect technology factors is what's driving economic factors and what determines the speed. Some believe you can not separate the two as no one can. The largest form would have endless amount of money companies must ensure that whatever technology decision they make is not limited by a business requirement. It is either or you need both because as a very good example if you have all the technology but you have no money to actually implement it, it's a waste. If you have all the finances in the world but then you still can't solve some issues because technology doesn't allow it look at cancer, people have been putting so much money into cancer it's all types of technology and all kinds of things but up to now we still don't have 100% cure for cancer so that's the technology that having the money or anything doesn't truly mean that we can solve those issues. So therefore when it comes to the service orientated organisations I still think you will need to have a balance. Around economic and technological the two go hand in hand almost and the reason why from an economic point of view technology is going to cost a bit more initially your investment is going to be more right but in the long run its going to reduce errors it's going to improve your service to the client it's going to enhance their service delivery to their clients they are equally important because the one impacts on the other one. a combination of both factors because the technology is there I mean infrastructure and stuff they ought to be there we are in a connected world today but economic factor play a role whereby in a sense we can come to costs as well</p>
Participant 1	Participant 5	Participant 11	Summary
<p>Response</p> <p>Economic the reason I would say that, it essentially defines the parameters within which you need to operate.</p> <p>An economic factor is important because it is based upon what your criteria for success will be.</p> <p>Why I say I favor that instead of technological factors is because technology changes so rapidly the deployment of a single technology 6 months later is bound to be redundant so to chase technology often you will land up over compensating.</p>	<p>Response</p> <p>Economic factors apply to everything even in the first question what did I bring up what are the costs the economic factors apply to any business.</p> <p>Technology itself might have a big economic impact that's the reason why you are going to have to have these armies of people around to train people deal with bangs to be able to deal with the unexpected side effects.</p> <p>I would say technology factors is what's driving it economic factors is what determines the speed.</p>	<p>Response</p> <p>I think they go hand in hand but I think as time goes on the technological factors in many ways take precedence over the economic factors because as you move along the disruption curve as eventually the technology itself becomes demonized and democratized.</p> <p>Looking at the economic factors and saying that we can't possibly behave because of the economic factors is short term thinking because the technology is going at a pace regardless of what is happening in the economy.</p>	<p>Summary</p> <p>These factors go hand in hand but I think as time goes on the technological factors in many ways take precedence over the economic factors because as you move along the disruption curve as eventually the technology itself becomes demonized and democratized therefore the tech is there the tech has been there for a while it is now building the other because it all comes down to cost at the end of the day the economic one feeds into technological factor.</p>

Figure 4.3: Creating a summary from responses

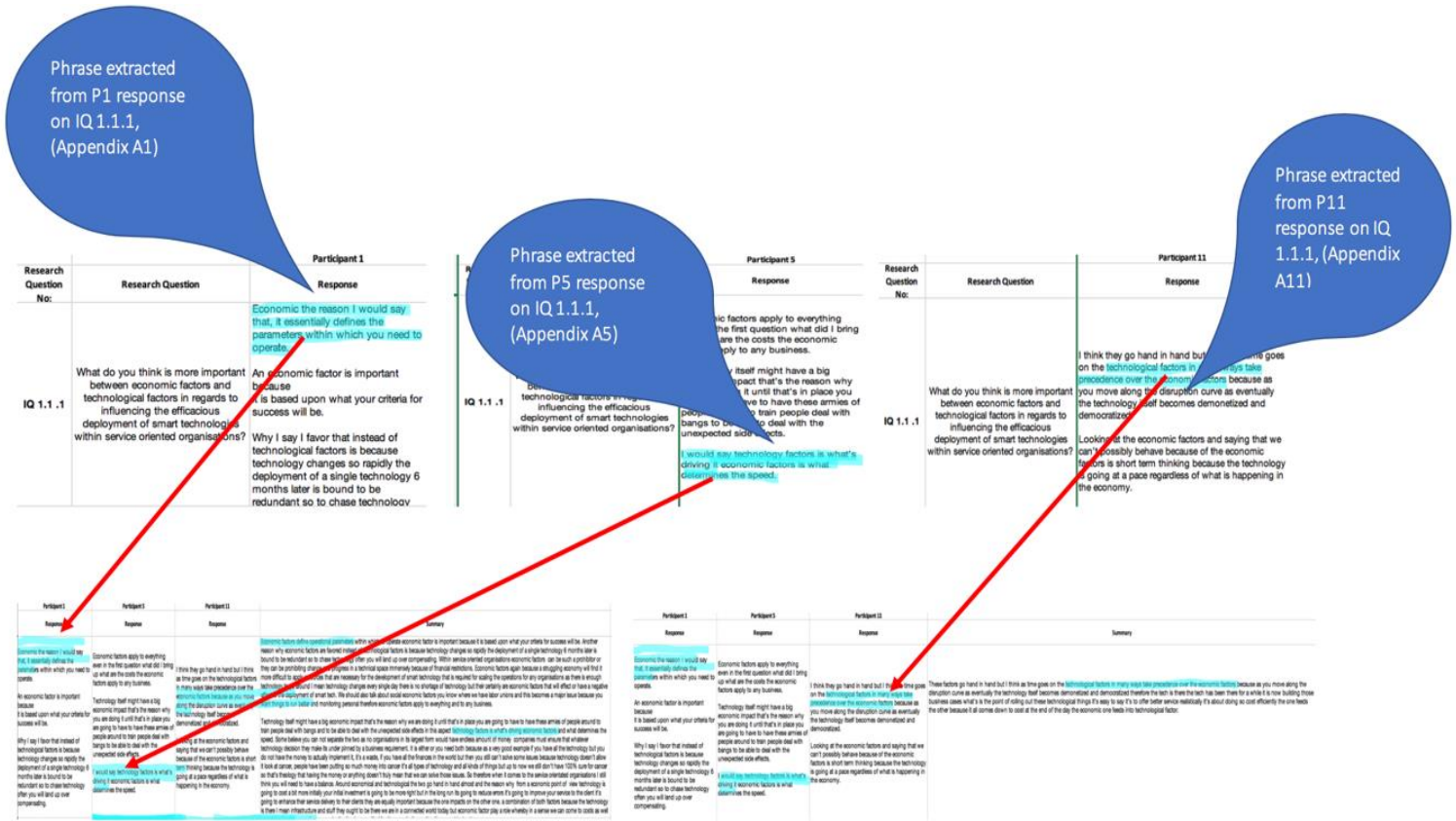


Figure 4.4: Extracting data from transcripts based on phrases and keywords

Figure 4.4 illustrates how phrases and keywords were identified from the responses from the interviews in the analysis sheet (Appendix E). All the participant responses and statements were analysed and phrases were extracted to express the statement best. An example of a summarised phrase, for example, “ST allows organisations to fail fast and fail cheap as they try things in a digital environment” (Appendix D1) was summarised as “Agility”. The findings are presented in such a way that the RQs, RSQs, and interview questions (IQs) are linked.

4.5 Findings

For the findings, the responses from the 14 participants were consolidated and discussed in relation to the answers. The findings were represented for each interview question. Therefore, as mentioned in section 4.3, the interviews were transcribed and coded, which resulted in keywords and phrases being summarised in Figure 4.2 and Figure 4.3.

RSQ 1.1: What are the technological factors influencing the efficacious deployment of smart technology within service-oriented organisations?

IQ 1.1.1: *What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?*

The majority of the participants (8 out of 14) stated that economic factors play a more important role than technology factors do in terms of influencing the efficacious deployment of ST within service-oriented organisations.

Contrary to these participants, P8 argued that economic and technological factors go hand in hand because:

“...from an economic point of view, technology is going to cost a bit more initially, your initial investment is going to be more, but in the long run, it is going to reduce errors. It is going to improve your service to the client; it is going to enhance their service delivery to their clients. You need buy in from your investors because it is one thing, and we have seen a lot of projects fail where you make a huge economic or financial substantial investment but it is not technologically sound. If you don't get buy in from the users it is going to fail; therefore, they are equally important because the one impacts on the other one” (Appendix D8).

Forty percent (40%) of the participants (6 out of 14) opined that economic and technological factors go hand in hand. P11 stated that “I think they go hand in hand, but I think as time goes on, the technological factors in many ways take precedence

over the economic factors because as you move along the disruption curve, as eventually the technology itself becomes demonetised and democratised” (Appendix D11). However, 60% of the participants (8 out of 14) indicated that they believe economic factors play a significantly more important role than technological factors.

P1 stated that, “economic - the reason I would say that it essentially defines the parameters within which you need to operate. An economic factor is important because it is based upon what your criteria for success will be” (Appendix D1).

P3 pointed to “the economic factors because for me a struggling economy will find it more difficult to apply resources that are necessary for the development of smart technology that is required for scaling the operations for any organisation” (Appendix D3).

Finding 1: Economic factors are more important than technological factors when deploying ST

***IQ 1.1.2:** Do you think political factors can influence the deployment of smart technology within service-oriented organisations?*

P2 mentioned “technology changes, so it needs to be driven from the top down and then to be basically filtered into the different departments [within service-oriented organisations]” (Appendix D2). P3 pointed out that “political regulations can stunt the growth of businesses and hinder entrepreneurs and start-ups that are necessary to drive innovations and competition” (Appendix D3). Some of the participants (P3, P5, P6, P9 & P13) indicated that they believe government regulations need to be in place so that technological organisations do not abuse their power. However, there needs to be a shift in the speed of government managing the regulations, as the speed at which technology develops is so fast that government struggles to keep up with the regulations. P13 used Estonia development as an example:

“Government [is] putting in place policy that allows technology to flourish. Another example would be Rwanda with their drone programs. Rwanda opened up their regulation, invited people to come and play despite having [one] little ounce to offer. Just looser regulation has allowed Rwanda to become a leader in that space” (Appendix D13).

The majority of the participants (10 out of 14) agreed that political factors could influence the deployment of ST within service-oriented organisations.

Finding 2: Technology changes need to be driven from the top down

Finding 3: Politics can hinder business and technological growth necessary to drive innovation and competition

Finding 4: Government regulations need to be in place in order to manage technological organisations due to their increased growth rate and speed of technology

Finding 5: Governments that have regulations in place which support technologies, become leaders in the industry

IQ 1.1.3: *Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?*

P1, P2 and P13 opined that if implemented correctly, STs have the potential to improve service delivery within service-oriented organisations. P1 stated that, “on the basis that they can impact process efficiency very accurately. They can allow for an accurate measure of performance over time of individuals and processes as well and allow for two-way communication between people on the ground and the organisations and processes that define them so that these processes can be diagnosed as performance and suitability and the life cycle of their project” (Appendix D1). P2 argued that ST can “make organisations a lot more efficient, a lot more standardised, smarter, it can make the information flow faster” (Appendix D2).

As a service-orientated organisation, the goal is to address service delivery for your potential client, “so they can offer a better service to their client” (P8, Appendix D8).

“Response time is a big factor there, so having smart technologies supporting us, like GPS locations, gives organisations that speediness in terms of response and speed, whatever the situation the client member and the individual finds himself in, it’s just a matter of response and access again” (P9, Appendix D9).

The majority of participants (11 out of 14) acknowledged that ST has the potential to address and improve service delivery problems within service-oriented organisations.

Finding 6: Correctly implemented STs have the potential to improve service delivery within service-oriented organisations

Finding 7: ST can improve organisational efficiency

Finding 8: ST can improve organisational service delivery

IQ 1.2.1: Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

STs can have positive economic outcomes within service-oriented organisations when they are deployed correctly. Smart technologies can fail in terms of implementation, so “correct deployment will definitely yield good results if it is designed around business outcomes sufficiently with their long term life cycle approach in mind” (P1, Appendix D1).

P2, P12 and P13 argued that if STs are just implemented for implementation sake, the outcomes of ST would not be positive. However, P2 debated that if problems are identified and then mapped “against the correct solution to solve the problems and become more efficient, then it will definitely have positive economic outcomes and make everything run a lot smoother” (Appendix D2). Nine (9) out 14 participants said they do think the deployment of ST will have positive economic outcomes within service-oriented organisations.

Finding 9: When deployed incorrectly, ST can fail and produce negative economic outcomes within service-oriented organisations

Finding 10: Correctly implemented STs have the potential to improve service delivery and have positive economic outcomes within service-oriented organisations

Finding 11: The deployment of STs could have positive economic outcomes within service-oriented organisations

IQ 1.2.2: Do you think it is economically viable to implement smart technology within in your organisations?

Many participants (10 out of 14) indicated that they think it is economically viable to implement STs within in their organisations on the basis that they are implemented “on the back of a comprehensive business case understanding what the return on investment would be relative to very quantifiable effectiveness”, as stated by P1 (Appendix D1). ST allow organisations to have platforms in place that are “less dependent on what language you may speak, what accent it is you have, and may not be easily understood. It will also allow it to provide services across time zones... so if we want to offer a centralised service and it can be via AI, it takes the human factor out of it apart from supervisory and looking at the content”, as highlighted by P6 (Appendix D6), which improves the technologies’ overall economic viability.

Finding 12: With a comprehensive business case and an understanding of ST, the return on investment is economically viable for organisations

Finding 13: ST cuts through global and geographical barriers while remaining economically viable

IQ 1.2.3: *What kinds of smart technology has you been exposed too, if any?*

The majority of the participants (13 out of 14) stated that they have been exposed to the Internet of Things (IoT), AI, ML, cloud computing systems integration, Artificial Reality (AR), blockchain, and Robotics Process Automation (RPA), which are identified as different kinds of ST. P1 mentioned that “we are looking at artificial intelligence, machine learning, cloud computing and processing, and IoT architecture and systems integration. Also, AR, blockchain and robotics process automation (RPA)” (Appendix D1). P2 mentions “AR, Virtual Reality (VR) learning content, machine learning and recommendation engines” (Appendix D2). The preceding are examples of the evidence gathered from participants.

Finding 14: The participants have been exposed to IoT, AI, machine learning, cloud computing systems integration, AR, blockchain, and robotics process automation (RPA)

IQ 2.1.1: *Do you think smart technologies will play an important role in the future of customer service?*

Thirteen (13) out of the 14 participants opined that ST is fundamental to the future of customer service. This is not just from a technological the point of view, but also from an understanding and forecasting demand overtime perspective. Organisations and businesses can adjust (proactively) their practices to move with the times as opposed to being reactive. P3 mentioned that STs are “going to create an environment which is just going to make things so convenient and easy which is a major driving factor of what is going to be this whole gig economy” (Appendix D3). P9 stated that “by having this artificial intelligence layer in the organisation it allows [organisations] to give a faster response alert personalised and individualised and I think it will absolutely play a big role in the future of CS” (Appendix D9).

Finding 15: ST is fundamental to the future of customer service

Finding 16: ST will create a convenient environment for customers

Finding 17: ST allow organisations to give a faster personalised response and individualised service to customers

IQ 2.1.2: *Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?*

Most of the participants (12 out of 14) said they do think encouraging the adoption of ST within the service delivery industry to enable impactful investments will help lower operational costs when implemented in the correct way.

P1 stated:

“Just buying a piece of technology is not going to solve the problem so what you need to do in terms of operational costs, we would need to link technology with process and link process with people, so you need to get all of those aspects working together because technology implemented on its own won’t work unless it is influenced in a way in which who are responsible for deploying the service are conducting themselves. So, it needs to form behavioural change, which leads to augmented behaviour that makes things easier to do to allow for a greater alignment for more efficient processes and that will result in operational efficiencies” (Appendix D1).

P6 mentioned that,

“What one has to guard against is where those activities were typically being covered by a human being, you need to ensure that there is a process change. You can’t have the old way of working and this new way which will take some investment, the two happening side by side because then you won’t lower your operational costs; you have got to keep a very brave decision but to do that you have got to manage that change very effectively with your existing staff that will be impacted” (Appendix D6).

P11 indicated that, significantly, organisations are,

“moving are moving away from a lot of fixed capital assets and moving a lot, I think that organisations in general are trying to move to operational costs, and adopting smart technologies allows us almost move to a pay-as-you-use mode. I think we are moving away from a model of big upfront investments. This in turn frees up expenditure to look at innovation products but also in those cases you are also only paying for what you need” (Appendix D11).

P13 mentioned that encouragement alone would not drive sufficient action, as it definitely needs to be driven from a top-down perspective where an organisation’s leadership is on board with this and understands the smarter things and the benefits of these ways in order to lower operational costs.

Finding 18: Operational costs will not be lowered by running both a manual and automated process at the same time, as both processes will cost double to run; a brave decision needs to be made to manage that change effectively

Finding 19: Organisations are moving away from many fixed capital assets and moving in general to a pay-as-you-use model

Finding 20: Technology changes need to be driven from the top down to justify the benefits of the lowered operational costs

Finding 21: ST being correctly deployed will encourage the adoption of ST as well as improved service experiences

IQ 2.1.3: *Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?*

P1 and P2 opined that encouraging the adoption of ST will help drive improved service experiences with the condition that ST is deployed correctly. P1 stated that “it allows for a whole host of improved scenario planning and forecasting” (Appendix D1). Encouraging the adoption of ST allows organisations to fail fast and fail cheap. Organisations can try things in a digital environment, which is much easier than in a physical environment, as stated by P1. P2 mentioned that “definitely one of the key pillars when implementing that [ST], would be adoption of staff upskilling of staff change management of the organisation; upskilling of the staff but also driving it down from the top basically very important” (Appendix D2).

It’s been found that “sometimes innovation doesn’t mean you have to start from scratch, it can latch onto some other innovation and be innovated on top of that, so what stops us from having an Uber eats equivalent for a bottle of wine from Nederburg” (Appendix D6) as mentioned by P6.

Finding 22: ST allow organisations to fail fast and fail cheap as they try things in digital environments

Finding 23: Improved service experiences, upskilling of staff and change management encourage the adoption of ST within the service delivery industry

Finding 24: Innovation does not mean you have to start from scratch; it can latch onto another innovation

IQ 2.2.1: Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

Most participants (10 out of 14) indicated that they do think the gap between digital and physical experiences is starting to close. However, it still has a long way to go, but in some areas it is obviously happening faster as, for example, smart innovation and technologies in the financial sector. P8 pointed out, "When last did you buy a magazine or a newspaper? So that answers that question/ Kindles, tablets, laptops, phones, that's the way of the future. The gap is closing fast" (Appendix D8).

Finding 25: The gap is starting to close; however, it still has a long way to go, but in some areas, it is obviously happening much faster than in others, for instance, the Fintech space

Finding 26: The gap is closing fast bearing in mind that the physical experience is still important because it is an emotional element it needs to be customer-centric driven

IQ 2.2.2: Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

Twelve (12) out of the 14 participants said they think ST will improve the value of service delivery through enhanced quality of customer interactions. P2 mentioned that,

"If ST is implemented with a purpose it must be implemented with a purpose and not just for the sake of using smart technology. It could help companies to be a lot more standardised and also to operate with more quality, like if they actually set and define standards, everybody can work based on that smart technology and can actually help to move us forward" (Appendix D2).

P3 stated that the "combination of physical and digital elements in a store [will] create [a] more sensorial customer experience that captivates modern consumers who live both online and offline" (Appendix D3). It has also been found from the majority of the participants (11 out of 14) that ST lets organisations respond faster to feedback.

P11 mentioned that,

"It lets us respond faster to feedback, whether it is positive or negative feedback, so it absolutely you have to use the technology and the data analytics and the

insights because otherwise your product is too easily overlooked, or if you are not responding to feedback then people are going to go well then don't bother to buy this anymore" (Appendix D11).

Finding 27: If ST is implemented with a purpose and not merely for the sake of using ST, it could help companies to be much more standardised and to operate with more quality

Finding 28: The combination of physical and digital elements will help create a more sensorial customer experience that captivates modern consumers who live both online and offline while improving the value of service delivery

Finding 29: ST lets organisations respond faster to feedback, whether it is positive or negative, so it will improve value service delivery as organisations have to use the technology, data analytics and insights

IQ 2.2.3: Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

P2, P4 and P7 noted that ST can influence service delivery environments in a negative way. P2 stated that "I think so, definitely yes, but that is if first of all you choose the wrong solution for the problem, if you literally just implemented because you have money left over and you just want to invest in technology, but you don't think whether it makes sense would it really support the organisation" (Appendix D2). P2 goes on to highlight that "but then also, if you rely too heavily on the technology and not on your people anymore, so getting that balance right and enabling people to leverage their technology for their own personal growth and their own personal success as a company" (Appendix D2).

P6 said when people abuse information, organisations need to "[ensure] that people don't fiddle on the back of your applications to get intelligence for wrongful measures" (Appendix D6). P13 pointed out that for instance. "Standard bank [is] shutting all the branches and what not, so I think that is one aspect, I think a big aspect, as you drive towards a tighter margin you are probable going to drive towards monopoly or oligopoly" (Appendix D13). Therefore, by over automation, the human touch is removed. Organisations need to be aware of this and keep the human element within their processes.

Finding 30: ST can influence service delivery environments in a negative way, but that is if organisations choose the wrong solution for the problem

Finding 31: Organisations rely too heavily on the technology and not on people anymore, so getting that balance right and enabling people to leverage their technology is important

Finding 32: Employees can misuse STs; thus, measures need to be put in place to avoid this misuse

Finding 33: Organisations drive towards tighter margins by over automation; the human touch is being replaced

4.6 Summary of the findings

The findings are listed per research question in [Table 4.3](#). The themes are derived from the findings and indicated in section 4.6.

RQ1: What are the factors affecting the adoption of smart technology for service delivery in organisations?

RSQ 1.1: What are the technological factors influencing the efficacious deployment of smart technology within service-oriented organisations?

[Table 4.3](#) lists eight (8) findings from **RSQ 1.1**. Two headline findings were identified from the below findings.

Table 4.3: Findings for RSQ 1.1

Finding No.	Description
Finding 1	Economic factors are more important than technological factors when deploying ST
Finding 2	Technology changes need to be driven from the top down
Finding 3	Politics can hinder business and technological growth necessary to drive innovation and competition
Finding 4	Government regulations need to be in place in order to manage technological organisations due to their increased growth rate and speed of technology
Finding 5	Governments that have regulations in place which support technologies, become leaders in the industry
Finding 6	Correctly implemented STs have the potential to improve service delivery within service-oriented organisations
Finding 7	ST can improve organisational efficiency
Finding 8	ST can improve organisational service delivery

Headline finding 1: Government regulations need to be in place in order to manage technological organisations due to their increased growth rate and speed of technology.

Headline finding 2: Correctly implemented STs have the potential to improve service delivery within service-oriented organisations.

RSQ 1.2: What are the economic factors influencing the efficacious deployment of smart technology within service-oriented organisations?

Table 4.4 lists six (6) findings from **RSQ 1.2**. One headline finding was identified from the below findings.

Table 4.4: Findings for RSQ 1.2

Finding No.	Description
Finding 9	When deployed incorrectly, ST can fail and produce negative economic outcomes within service-oriented organisations
Finding 10	Correctly implemented STs have the potential to improve service delivery and have positive economic outcomes within service-oriented organisations
Finding 11	The deployment of STs could have positive economic outcomes within service-oriented organisations
Finding 12	With a comprehensive business case and an understanding of ST, the return on investment is economically viable for organisations
Finding 13	ST cuts through global and geographical barriers while remaining economically viable
Finding 14	The participants have been exposed to IoT, AI, machine learning, cloud computing systems integration, AR, blockchain and robotics process automation (RPA)

Headline finding 3: On the back of a comprehensive business case and understanding the return on investment, it is economically viable to implement ST within organisations.

RQ2: How can smart technology influence customer satisfaction within service-orientated organisations?

RSQ 2.1: How can smart technology influence customer satisfaction within service-oriented organisations?

Table 4.5 lists 10 findings from RSQ 2.1. Two headline findings were identified from the below findings.

Table 4.5: Findings for RSQ 2.1

Finding No.	Description
Finding 15	ST is fundamental to the future of customer service
Finding 16	ST will create a convenient environment for customers
Finding 17	ST allow organisations to give a faster, personalised response as well as individualised service to customers
Finding 18	Operational costs will not be lowered by running both a manual and automated process at the same time, as both processes will cost double to run; a brave decision needs to be made to manage that change effectively
Finding 19	Organisations are moving away from many fixed capital assets and moving in general to a pay-as-you-use model
Finding 20	Technology changes need to be driven from the top down to justify the benefits of the lowered operational costs
Finding 21	ST being correctly deployed will encouraging the adoption of ST as well as improved service experiences
Finding 22	ST allows organisations to fail fast and fail cheap as they try things in a digital environment
Finding 23	Improved service experiences, upskilling of staff and change management encourage the adoption of ST within the service delivery industry
Finding 24	Innovation does not mean you have to start from scratch; it can latch onto another innovation

Headline finding 4: ST allows organisations to give a faster, personalised response as well as individualised service to customers.

Headline finding 5: Organisations are moving away from many fixed capital assets and moving in general to a pay-as-you-use model.

RSQ 2.2: How can smart technology influence customer experience within service-oriented organisations?

Table 4.6 lists nine (9) findings from RSQ 2.2. One headline finding was identified from the below findings.

Table 4.6: Findings for RSQ 2.2

Finding No.	Description
Finding 25	The gap is starting to close; however, it still has a long way to go, but in some areas, it is obviously happening much faster than in others, for instance, the Fintech space
Finding 26	The gap is closing fast bearing in mind that the physical experience is still important because it is an emotional element it needs to be customer-centric driven
Finding 27	If ST is implemented with a purpose and not merely for the sake of using ST, it could help companies to be much more standardised and to operate with more quality

Finding No.	Description
Finding 28	The combination of physical and digital elements will help create a more sensorial customer experience that captivates modern consumers who live both online and offline while improving the value of service delivery
Finding 29	ST lets organisations respond faster to feedback, whether it is positive or negative, so it will improve value service delivery as organisations have to use the technology, data analytics and insights
Finding 30	ST can influence service delivery environments in a negative way, but that is if organisations choose the wrong solution for the problem
Finding 31	Organisations rely too heavily on the technology and not on people anymore, so getting that balance right and enabling people to leverage their technology is important
Finding 32	Employees can misuse STs; thus, measures need to be put in place to avoid this misuse
Finding 33	Organisations drive towards tighter margins through over automation; the human touch is being replaced.

Headline finding 6: The gap between digital and physical world is starting to close; however, it still has a long way to go, but in some areas, it is obviously happening much faster than in others, for instance, the Fintech space

Headline finding 7: Organisations drive towards tighter margins through over automation; the human touch is being replaced.

From a total of 33 findings, seven (7) headline findings were identified (Table 4.7).

Table 4.7: The headline findings of the research

Finding No.	SRQ	Finding
1	RSQ 1.1	Government regulations need to be in place in order to manage technological organisations due to their increased growth rate and speed of technology
2	RSQ 1.1	Correctly implemented STs have the potential to improve service delivery within service-oriented organisations
3	RSQ 1.2	On the back of a comprehensive business case and understanding the return on investment, it is economically viable to implement ST within in organisations
4	RSQ 2.1	ST allows organisations to give a faster, personalised response as well as individualised service to customers
5	RSQ 2.1	Organisations are moving away from many fixed capital assets and moving in general to a pay-as-you-use model
6	RSQ 2.2	The gap is starting to close; however, it still has a long way to go, but in some areas, it is obviously happening much faster than in others, for instance, the Fintech space

Finding No.	SRQ	Finding
7	RSQ 2.2	Organisations drive towards tighter margins through over automation; the human touch is being replaced

4.7 Categories and themes development

Table 4.8 shows a sample from Appendix A, i.e. how the findings were derived from the summaries (the collective responses from the participants) in IQ 1.3.1. The findings were grouped and then further arranged into themes (Table 4.9).

Table 4.8: Example extract from analysis (creating themes from the findings and categories for IQ 1.3.1)

Summary	Findings	Categories	Themes
Economic because it essentially defines the parameters within which you need to operate. Economic factor is important because it is based on what your criteria for success will be. Another reason why economic factors are favoured instead of technological factors is because technology changes so rapidly, the deployment of a technology 6 months later is bound to be redundant, so to chase technology often you will land up over compensating. Within service-oriented organisations, economic factors can be such a prohibitor or they can be prohibiting change and progress in a technical space immensely because of financial restrictions. Economic factors again because a struggling economy will find it more difficult to apply.	Economic factors are more important than technological factors when deploying ST	Cost-Effectiveness	Economics

Table 4.9: Summary of SRQs, findings (33), categories (23) and themes (7)

RQs	Finding No.	Finding	Categories	Themes
RSQ 1.1	Finding 1	Economic factors are more important than technological factors when deploying ST	Cost-Effectiveness	Economics
RSQ 1.1	Finding 2	Technology changes need to be driven from the top down	Policy	Politics
RSQ 1.1	Finding 3	Politics can hinder business and technological growth necessary to drive innovation and competition	Political Impact	Politics
RSQ 1.1	Finding 4	Government regulations need to be in place in order to manage technological organisations due to their increased growth rate and speed of technology	Regulation	Politics
RSQ 1.1	Finding 5	Governments that have regulations in place which support technologies, become leaders in the industry	Regulation	Politics
RSQ 1.1	Finding 6	Correctly implemented STs have the potential to improve service delivery within service-oriented organisations	Service Delivery Efficiency	Customer Service
RSQ 1.1	Finding 7	ST can improve organisational efficiency	Service Delivery Efficiency	Customer Service

RQs	Finding No.	Finding	Categories	Themes
RSQ 1.2	Finding 8	ST can improve organisational service delivery	Service Delivery Efficiency	Customer Service
RSQ 1.2	Finding 9	When deployed incorrectly, ST can fail and produce negative economic outcomes within service-oriented organisations	Negative Economics	Economics
RSQ 1.2	Finding 10	Correctly implemented STs have the potential to improve service delivery and have positive economic outcomes within service-oriented organisations	Positive Economics	Economics
RSQ 1.2	Finding 11	The deployment of STs could have positive economic outcomes within service-oriented organisations	Positive Economics	Economics
RSQ 1.2	Finding 12	With a comprehensive business case and an understanding of ST, the return on investment is economically viable for organisations	Economic Viability	Economics
RSQ 1.2	Finding 13	ST cuts through global and geographical barriers while remaining economically viable	Economic Viability	Economics
RSQ 1.2	Finding 14	The participants have been exposed to IoT, AI, machine learning, cloud computing systems integration, AR, blockchain, and robotics process automation (RPA)	Technology choice	Technology
RSQ 2.1	Finding 15	ST is fundamental to the future of customer service	Customer Service	Customer Service
RSQ 2.1	Finding 16	ST will create a convenient environment for customers	Convenience	Customer Service
RSQ 2.1	Finding 17	ST allow organisations to give a faster, personalised response as well as individualised service to customers	Personalisation	Customer Service
RSQ 2.1	Finding 18	Operational costs will not be lowered by running both a manual and automated process at the same time, as both processes will cost double to run; a brave decision needs to be made to manage that change effectively	Return on Investment	Economics
RSQ 2.1	Finding 19	Organisations are moving away from many fixed capital assets and moving in general to a pay-as-you-use model.	SaaS Technology	Technology
RSQ 2.1	Finding 20	Technology changes need to be driven from the top down to justify the benefits of the lowered operational costs	Policy	Technology
RSQ 2.1	Finding 21	ST being correctly deployed will encouraging the adoption of ST as well as improved service experiences	Adoption	Technology
RSQ 2.1	Finding 22	ST allows organisations to fail fast and fail cheap as they try things in a digital environments	Agility	Technology
RSQ 2.1	Finding 23	Improved service experiences, upskilling of staff and change management encourage the adoption of ST within the service delivery industry	Change Management	Technology

RQs	Finding No.	Finding	Categories	Themes
RSQ 2.1	Finding 24	Innovation does not mean you have to start from scratch; it can latch onto another innovation	Infrastructure	Technology
RSQ 2.2	Finding 25	The gap is starting to close; however, it still has a long way to go, but in some areas, it is obviously happening much faster than in others, for instance, the Fintech space	Digitisation	Digital Transformation
RSQ 2.2	Finding 26	The gap is closing fast bearing in mind that the physical experience is still important because it is an emotional element it needs to be customer-centric driven	Digitisation	Digital Transformation
RSQ 2.2	Finding 27	If ST is implemented with a purpose and not merely for the sake of using ST, it could help companies to be much more standardised and to operate with more quality	Value Add	Customer Service
RSQ 2.2	Finding 28	The combination of physical and digital elements will help create a more sensorial customer experience that captivates modern consumers who live both online and offline while improving the value of service delivery	Digitisation	Customer Service
RSQ 2.2	Finding 29	ST lets organisations respond faster to feedback, whether it is positive or negative, so it will improve value service delivery as organisations have to use the technology, data analytics and insights	Customer Experience	Customer Service
RSQ 2.2	Finding 30	ST can influence service delivery environments in a negative way, but that is if organisations choose the wrong solution for the problem	Technology choice	Technology
RSQ 2.2	Finding 31	Organisations rely too heavily on the technology and not on people anymore, so getting that balance right and enabling people to leverage their technology is important	Over Automation	Risk
RSQ 2.2	Finding 32	Employees can misuse STs	Security Concerns	Risk
RSQ 2.2	Finding 33	Organisations drive towards tighter margins through over automation; the human touch is being replaced	Over Automation	Risk

4.8 The themes

Information from 14 interviews was analysed, which resulted in a summary of 33 findings, 23 categories and seven (7) themes. [Table 4.10](#) shows the link between the research questions and the themes developed.

Table 4.10: The research questions and themes linked

Research Questions	Themes
RSQ 1.1; 2.1; 2.2	Customer Service
RSQ 2.2	Digital Transformation
RSQ 1.2; 2.1; 2.2	Technology
RSQ 1.1; 1.2; 2.1	Economics
RSQ 1.1	Politics
RSQ 1.1; 1.2; 2.1; 2.2	Due Diligence
RSQ 2.2	Risk

The seven themes include: i) Customer Service; ii) Digital Transformation; iii) Economics; iv) Politics; v) Due Diligence; vi) Risks; and vii) Technology. These themes are discussed in Chapter Five.

4.9 Summary

Chapter Four supports a background for ST, which enables collaboration with users in various environments in a smart way while providing organisations and people a better quality of life. ST can be used for various cases within SOOs and people's everyday lives. ST has a significant impact in today's fast paced world, with instant gratification being the norm where people expect technology to work at the click of a button, which drives customer experience.

The participants included: Managing Director; two Innovation and Insight Leaders; two Heads of Product; Chief Operations Officer; Operations Manager; Smart Real Estate Leader; Technical Leader; Business Unit Manager; Business Analysis Application Delivery manager; Enterprise Application Head; Chief Technology Officer; and Delivery Consultant. The participants gave consent to the researcher to collect data for this research study ([Appendix A](#)).

The chapter concludes with Information from 14 interview questions, answered by 14 participants, with a summary of 33 findings, 23 categories and seven (7) themes, along with seven (7) headline findings which are listed below.

The themes are: i) Customer Service; ii) Digital Transformation; iii) Economics; iv) Politics; v) Due Diligence; vi) Risks; and vii) Technology.

The headline findings are:

- Headline finding 1:** Government regulations need to be in place in order to manage technological organisations due to their increased growth rate and speed of technology.
- Headline finding 2:** Correctly implemented STs have the potential to improve service delivery within service-oriented organisations.
- Headline finding 3:** On the back of a comprehensive business case and understanding the return on investment, it is economically viable to implement ST within in organisations.
- Headline finding 4:** ST allows organisations to give a faster, personalised response as well as individualised service to customers.
- Headline finding 5:** Organisations are moving away from many fixed capital assets and moving in general to a pay-as-you-use model.
- Headline finding 6:** The gap between digital and physical world is starting to close; however, it still has a long way to go, but in some areas, it is obviously happening much faster than in others, for instance, the Fintech space
- Headline finding 7:** Organisations drive towards tighter margins through over automation; the human touch is being replaced.

CHAPTER FIVE: DISCUSSION

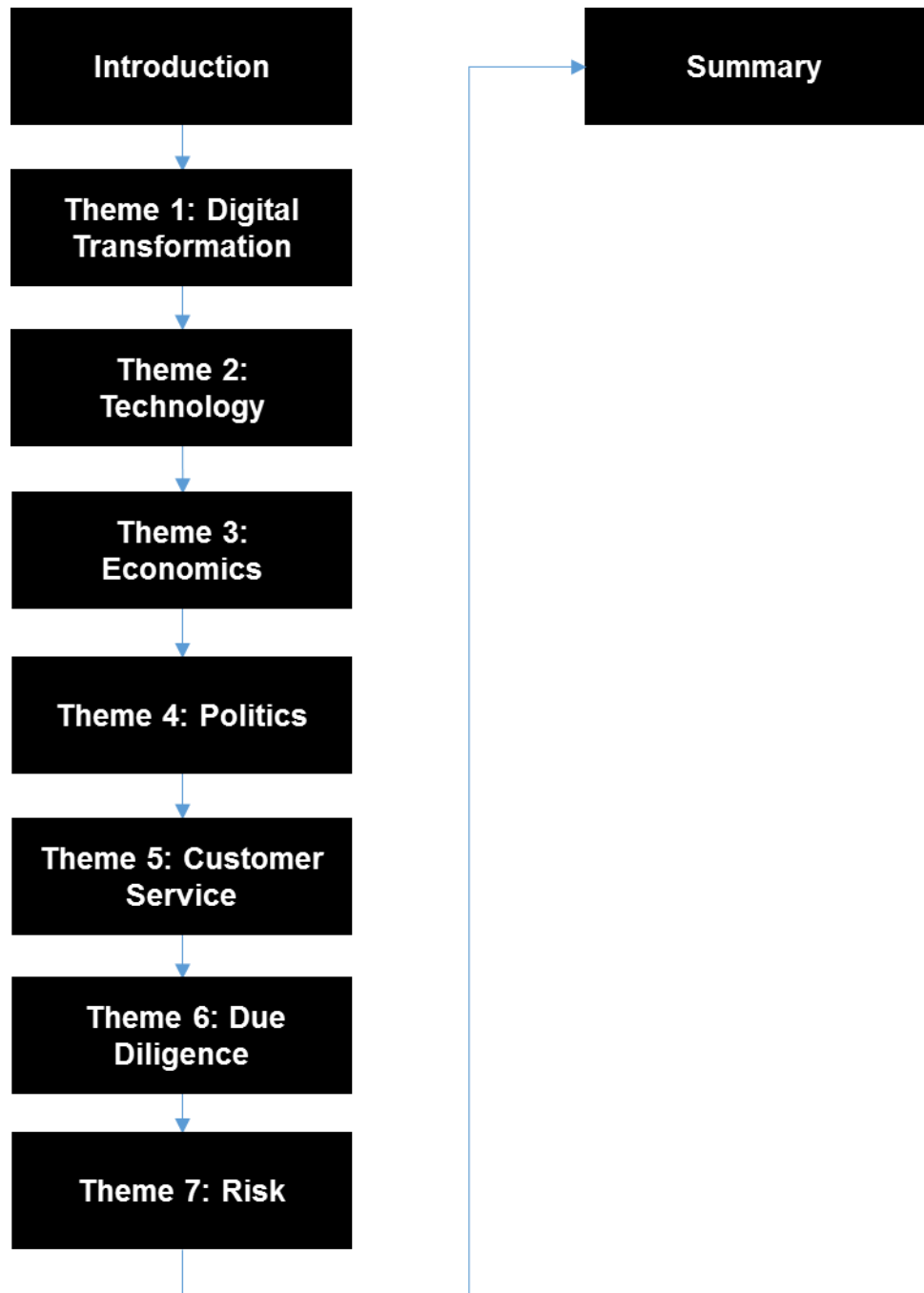


Figure 5.1: Chapter Five layout

5.1 Introduction

In this chapter (Figure 5.1) the themes as developed from the findings of the study as well as the link to the research questions are discussed. The discussion takes place against the background of the aim of the study, namely to explore the influence of smart technology in transforming service delivery environments.

The research questions as well as the sub-research questions (Table 1.1) are addressed under each theme. The themes are discussed in the following order: i) Digital Transformation; ii) Technology; iii) Economics; iv) Politics; v) Customer Service; vi) Due diligence, and finally, vi) Risk. The chapter ends with a summary.

5.2 Theme 1: Digital Transformation

Digital transformation is defined as “the use of digital and information technologies to transform business processes and user experience in order to significantly improve operations and performance” (Park, El Sawy & Hong, 2020:125). This theme relates to **RQ2**, “How can smart technology influence customer satisfaction within service-orientated organisations”, and **RSQ 2.2**, “How can smart technology influence customer experience within service-oriented organisations?”

Findings indicate that there may be a gap between business performance and user experience. However, this gap is beginning to close as ST is implemented more and more by business. This improvement is industry specific, of which the Fintech space is an example (Findings 25 & 26). User experience, and therefore customer satisfaction, remains an important challenge towards the successful implementation of a digital transformation strategy for businesses. Customer experience as well as CS must be improved on when implementing a digital transformation strategy. This is important as the physical experience of the customer is paramount, as it is an emotional element; it needs to be customer-centric driven (Koch & Windsperger, 2017; Fitzgerald et al., 2013). Organisations adopt new digital technologies such as ST, for instance mobile and smart devices, to shift and enhance business processes and customer relationships (Horachek, 2016).

With the endeavour to improve customer service and experience through digital transformation, SOOs are facing a number of challenges to overcome in order to survive and thrive. Some of these challenges can be addressed through digital transformation, for example, when organisations struggle to process and utilise the rapid digital increasing of volumes of data (including Big Data) in an effective and efficient manner (Attaran, Attaran & Kirkland, 2019). If not managed correctly, the result can be obsolete market information and open doors to strategic threats, as

organisations struggle to identify and react to critical challenges in a timely manner (Park, El Sawy & Hong, 2020). Digital transformation along with ST capabilities can create opportunities to address challenges and threats in order to sustain competitive advantages for SOOs (Wiljén & Khalaf Beigi, 2016).

Digital transformation, and more specifically ST, is becoming a critical component of a business's CS and experience strategies. The quest towards digital transformation places the management of technology at the forefront. This then leads to the next theme – Technology.

STs are defined as smart electronic devices or systems that can be connected to the Internet and used interactively. These technologies have been used in multiple applications within multiple industries, sectors and even governments. In essence, STs allow normal business and personal tasks and activities to be done in a smart manner. ST adoption is on the increase around the world, and more and more people and organisations embrace these STs (Roy et al., 2018). **RQ1** looks at identifying the factors affecting the adoption of smart technology for service delivery in organisations. Among the factors identified, economic, technological and political factors are vital to the adoption of ST within SOOs. Finding 14 identifies that many participants have been exposed to IoT, AI, ML, cloud computing systems integration, AR, blockchain, and RPA, which then resulted in the categorisation of the ST themes. Government policies need to accommodate the implementation of STs and their safety concerns in order to facilitate efficient and effective adoption within various environments (Roblek et al., 2019).

ST is not simply about the creation and utilisation of technology, it is also concerned with the inclusion of political, legal, economic, and social environmental elements. The elements are categorised as follows: smart living (quality of life), smart mobility (transport and ICT), smart governance (participation), smart environment (natural resources), and smart economy (competitiveness) (O'Grady & O'Hare, 2017). The introduction of ST should motivate entrepreneurship and job creation within cities, organisations, and homes while providing opportunities to consider advanced solutions as a means to improve services and process through ST Initiatives. ST enhances transportation systems and urban management. The benefits of rapidly introducing STs could outweigh the costs of implementing other long-term solutions. Start-ups, innovators, and small-, medium- and micro enterprises (SMMEs) are pivotal in the development of ST in various environments, as there is more agility in adopting these technologies when compared to large international ICT conglomerates

which provide ready-made out-the-box vanilla solutions which might or might not meet the need (Sindhuja & Akhilesh, 2020).

As much as ST can be advantageous and efficient to those who use and adopt it, there are multiple obstacles and hurdles that affect this adoption in a negative way. These include privacy and security concerns, rigid regulatory environments, the lack of buyer confidence in the technology, and limited evidence for business cases (Golant, 2017). ST is yet to be fully embraced by the community at large; therefore, the use of these technologies within SOOs is a significant sign that they are gradually making their way into organisational day-to-day business operations (Garcia, 2020).

5.3 Theme 2: Technology

Software as a service (SaaS) is a unique delivery model for software licensing on a subscription basis, which is centrally hosted in cloud-centred environments (Stavriniades & Karatza, 2020). SaaS solutions are generally web-based and can be accessed and used by users in various remote locations. SaaS solutions are linked to business or social applications for consumer access on private or public cloud solutions (Oliveira et al., 2019).

Many SOOs have invested and reaped bountifully because of SaaS. These organisations have utilised a business model that is not dependant on the once-off purchase of a product or a service; instead, it is reliant on the recurring use of its services. Therefore, organisations now address their client's needs through an internet server, which manages to retain clients, improve service, and increase profitability on a consistent recurring basis (Asija & Nallusamy, 2019). An excellent example of this is the gaming sector, which makes use of payment transparency and creativity to grow its industry (Vaudour & Heinze, 2020).

Amazing examples of renowned and established SaaS organisations include Amazon Web Services, Microsoft Office 365, and Google Apps (Chou, 2019). These are among the biggest organisations in the world, which coincidentally operate on a SaaS model. The model is known to save time and money, provide synchronous distribution through scalability and compatibility. SaaS is a cloud computing application which makes it a perfect strategy for ST to use. Finding 19 posits that organisations are moving away from many fixed capital assets and moving in general to a pay-as-you-use model, thereby contributing to SaaS being categorised and identified as a ST theme.

Finding 20 indicates that technology changes need to be driven from the top down in order to justify the benefits of lowered operational costs. This principle is also true for

SaaS, as the model needs to be justified and led by senior organisational leaders, so that middle management and downwards to the operational levels of the organisation can understand the SaaS objective from a visionary perspective rather than a management or operational perspective, because it is always good to understand the bigger picture. SaaS business models are dependent on powerful customer engagements and relationship management (CRM) to identify users and to follow up with them accordingly (Vaudour & Heinze, 2020).

The gaming customer segment is an excellent example of how SaaS can provide multiple revenue streams such as subscription, season passes, micro transaction and advertising to benefit SOOs financially. Revenue stream is defined as the various models and mechanisms used to generate revenue for SaaS organisations. While capturing and bringing value to organisations, the SaaS business model in the industry is moving from “one price, one service” to where services grow and evolve incrementally over time and are billed and charged on an incremental level (Butt et al., 2019). For many SOOs, this means business income is kept alive for extended, consistent periods of time, and organisations can also build and develop their services over the long term. Therefore, even if consumers buy fewer services, they will utilise them for longer periods of time and, in doing so, contribute to a steady revenue stream through micro transactions.

Micro transactions give organisations the option to customise their user experience. Users willing to pay extra to benefit instantly from modules and plugins are afforded the opportunity to compensate for their lack of experience or ability (Tomić, 2018). In short, micro transactions provide an avenue for customers and users to be tailored to the evolving wishes of their service needs and wants.

ST is known to touch on the Fintech space. The industry has evolved and is touching on a multitude of financial areas, which include: (i) payments; (ii) data security; (iii) investments; (iv) risk management; and (v) customer experience (Arner, Barberis & Buckley, 2015).

Payments: Mobile payments are the backbone of the Fintech industry, motivating financial progress and autonomy in many countries. Fintech mobile payments are subject to strict regulatory standards and guidelines, and are integrated into various digital payment systems from various locations around the globe. Mobile payments are known to authenticate more than US\$ 5.4 trillion of daily foreign exchange markets globally (Arner, Barberis & Buckley, 2015).

Investment: Traditional investments emphasise their attention on peer-to-peer lending as well as crowd funding. Furthermore, Fintech has a focus that supersedes the narrow scope of traditional investments with the aim of incorporating technology. This is done with traditional standards in consideration, however, with the intention to scale traditional investment prospects through vehicles such as Initial Public Offerings (IPO) and listings. The NASDAQ is an example of the dematerialisation of the securities industry. Easy Equities is an example of a South African Fintech ST which has allowed the scale of traditional investments and placing the investment power into the hands of individual consumers (Lee & Shin, 2018).

Data security: Security is important in Fintech because of the potential economic misuse of the significant Fintech data. This is due to vulnerabilities in financial systems that can be taken advantage of and have been noted as a security concern. Digital financial crime is of major concern for the Fintech industry; therefore, Fintech organisations need to ensure that the stringiest security measures are adopted for their products and services. Additionally, governments also need to ensure that policies are in place to protect consumers who might be vulnerable to data and security issues while utilising Fintech technology (Schueffel, 2016). Even though Fintech is known to be increasing financial productivity, it is not entirely perfect as it is consistently evolving.

Risk management: Risk management is central to Fintech due to the mitigating processes and procedures that need to be followed to increase profits and control risk. Risk management is an area which Fintech organisations must pay attention to because if handled incorrectly, it may lead to unwanted penalties and fines for those who do not manage their risks adequately (Donald, 2020).

Consumer experience: Consumer experience in the mobile financial services is important for financial institutions and is essential to Fintech organisations and consumers. An easy to use customer experience is vital for the adoption of Fintech at an increased scale. The easy to use approach will enable more and more consumers to utilise the benefits and advantages of financial technology in a manner that will add convenience to their personal and financial lives. This will also drive and increase competition among Fintech organisations and ensure that these organisations keep on pushing the envelope in the Fintech space (Alam & Zamani, 2019).

5.4 Theme 3: Economics

Economics relates to the study in terms of how society manages its resources, how society makes decisions, how much they buy and save, and how they invest.

Economics also ties in to how people interact with one another, for instance, how buyers and sellers of a products and services together influence the price of products and services, and even the quantities being sold.

ST has been seen to have positive economic outcomes for SOOs due to their elasticity and comparative advantage nature. **RSQ 1.2** aimed to identify the economic factors influencing the efficacious deployment of ST within service-oriented organisations – factors that have been identified, gathered and captured into the research findings (Table 4.7). For example, Finding 10 (Table 4.4) mentions that correctly implemented STs have the potential to improve service delivery and have positive economic outcomes within service-oriented organisations.

ST has the potential to improve the quality and efficiency of decision making, and therefore has the ability of impacting the economics of SOOs. For instance, we have seen how closely finances and technology have come together in the past years in the Fintech space. As technologies are evolving, organisations are embracing and leveraging them as competitive advantages to better enhance their insights for decision making and business strategies.

ST has the opportunity to evaluate the level of knowledge on Bitcoin, Blockchain and Fintech, and their evolution over time. The findings show that these technologies are evolving, and organisations embrace them for this competitive advantage. Thus, organisations need to leverage research on these technologies to better understand them, optimise their business strategies, and develop critical insights for decision making. Finding 9 (Table 4.4) indicates that when deployed incorrectly, ST can fail and produce negative economic outcomes within service-oriented organisations and society. This is a common reality that can be seen in today's economic environment, with very discouraging results. The rise and decline of Bitcoin a few years back is an excellent example of this, as many people put their faith in Bitcoin technology with the expectation of making money because the technology seemed promising at the time. Many were making money from it, until the technology became unstable and panic and worry started to emerge; the technology's value dropped and many people lost a significant amount of money (Cramer, 2019).

RSQ 1.1 aimed to address the technological factors influencing the efficacious deployment of ST within service-oriented organisations. Economics emerged as one of the factors that can influence the efficacious deployment of ST, as financial backing and resources are required to implement these technologies. From an economic point of view, someone needs to sponsor these technologies.

As finding 12 ([Table 4.4](#)) points out, with a comprehensive business case and an understanding of ST, the return on investment is economically viable for organisations.

Finding 13 ([Table 4.4](#)) established that ST can cut through global and geographical barriers while remaining economically viable. For example, Uber is a company making use of ST for their ridesharing customer experience. Uber started out in America and has now expanded to multiple countries due to its scalability and ability to provide a standardised customer experience globally while remaining financially viable in each country (Hall, Palsson & Price, 2018).

5.5 Theme 4: Politics

Politics is defined as actions which are correlated with the governance, policies, rules and regulations of an environment (McCarthy, 2017). ST can have positive influences on politics and society, thereby enhancing citizen environment as well as their engagement with their government.

Studies have shown that e-government technologies can have positive influences on politics and citizens' engagements with government. Even though many studies have confirmed that e-government technologies encourage citizen engagements, ST is still improving and has the potential to add more value at a bigger scale, for example in smart cities to be developed (Gagliardone, 2016).

E-government coupled with ST has a direct impact on governance through participation and service delivery. Finding 2 ([Table 4.3](#)), which identifies politics as a theme, states that technology changes need to be driven from the top down, thus, policies and procedures need to be derived and driven from an authoritative level within an organisation or a government for the changes to be taken seriously, as leadership should take the lead so that the rest can follow (Meckling & Nahm, 2019).

Finding 3 ([Table 4.9](#)) identifies political impact as a category and politics as a theme, thereby suggesting that Politics can hinder business and technological growth necessary to drive innovation and competition. This can be seen in various countries that have strict and tight policies regarding technology – they struggle to grow economies at scale, they struggle to innovate and keep up with countries that have less strict policies on technology and its adoption.

[Figure 5.2](#) shows the interrelationship of the history of cyber security politics, which is shaped by the interplay of three broad spheres: Technology, Politics and Science.

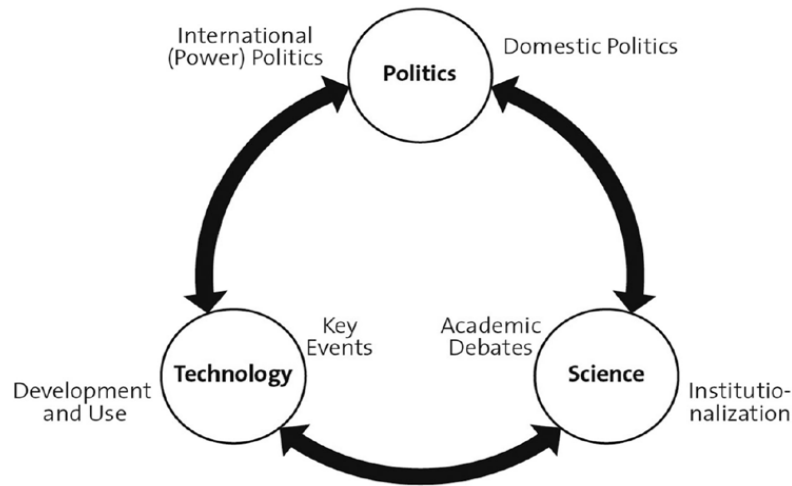


Figure 5.2: Six factors driving cyber security politics (adopted from Dunn Cavelty & Wenger, 2020:9)

Research has shown that political preferences and contexts have shaped the evolution of digital technologies. This is driven fundamentally by the organisations developing these technologies along with the dynamic interplay of cyber security and politics (Dunn Cavelty & Wenger, 2020).

Finding 4 (Table 4.9) identifies regulation as a category and politics as a theme which highlights that government regulations need to be in place in order to manage technological organisations due to their increased growth rate and speed of technology. It is imperative that government takes the lead at drawing up and putting policies in place that will protect technology users and ensure that technology organisations do not abuse and exploit their power and knowledge. Technology organisations have access to millions of users’ personal, private and confidential information. This information is prone to vulnerabilities and concerns as we have seen with companies such as Yahoo, who has yet to settle millions of dollars due to a data breach class action lawsuit (Finnemore & Hollis, 2016). Governments need to ensure that Tech organisations are held accountable for privacy and security issues that might have a negative effect on individual technology users and consumers.

Table 5.1: Summary of driving factors (adopted from Dunn Cavelty & Wenger, 2020:10)

Spheres	Driving Factors	Description
Technology	Development and use of digital technologies	Technologies are shaped by political ideas and power structures, and in turn, they shape the possibilities of political action
	Key events (cyber-related)	Events outside the cyber realm with influence on cyber security politics and events from the cyber realm in the form of cyber incidents

Spheres	Driving Factors	Description
Politics	International (power) politics	Belief in new sources of power (“cyber power”) and patterns of cooperation and conflict between great powers
	Domestic politics	Potentially conflictual negotiation processes about roles and responsibilities for state institutions, economy, and society (nationally and internationally)
Science	Academic debates	Broader ontological and epistemological trends that shape the discipline of International Relations and Security Studies
	Institutionalisation	Opportunities and constraints for researchers in the form of positions, funding, publication outlets, and research networks

5.6 Theme 5: Customer Service

CS is defined as the provisioning of service to customers ahead of, during and subsequently after a sale (Goodman, 2019). CS should not to be confused with customer satisfaction, which is one of the most important factors in business. SOOs know that CS levels vary from one organisation to another, thereby allowing benchmarking of service among organisations. Successful organisations stay alive because of satisfied customers more than ever in service-oriented industries (Xu et al., 2017). CS is paramount in building customer loyalty. ST is known to improve performance and value by reducing the inefficacy in organisations while improving customer satisfaction, which leads to retaining old and existing customers and adding new customers (Cao, Ajjan & Hong, 2018).

For example, ST has led towards improved financial performance in the financial sector, which is one of the reasons we have a totally dedicated and booming Fintech industry. RSQ 2.1 is aimed at addressing how ST can influence customer satisfaction within service-oriented organisations and as a result, CS has been identified as a theme for this study. Finding 27 (Table 4.6) identifies that if ST is implemented with a purpose and not merely for the sake of using ST, it could help companies to be much more standardised and to operate with more quality. Finding 28 (Table 4.6) concludes that the combination of physical and digital elements will help to create a more sensorial customer experience that captivates modern consumers who live both online and offline, while improving the value of service delivery.

CS evaluates how products and services supplied by organisations can meet customer expectations. This is achieved when everyone knows the concepts and practices of good CS, and strives towards meeting the requirements of their actions (Cheshin, Amit & Van Kleef, 2018). When the correct principles are applied,

mechanisms and practices of services are oriented towards effective customer satisfaction. However, many organisations that have not yet adopted ST are still unable to turn this desire into reality, because they lack the concepts, tools and ST that are used to transform the ideas and theories of improving the quality of CS into actual productive practices (Foroudi et al., 2018:272).

5.7 Theme 6: Due Diligence

Due diligence refers to the research and investigation that rational organisations or individuals are expected to undertake prior to entering into an agreement with one another (Audretsch et al., 2016). An example of due diligence in organisations is the process of assessing the offerings, benefits and potential disadvantages of a particular offering or solution that contributes significantly to informed decision making. This is done by enhancing the amount and quality of information available to decision makers and by ensuring that this information is systematically used to evaluate the decision at hand and that all its costs, benefits, and risks are accounted for before implementation (Kangethe et al., 2019).

Finding 21 (Table 4.6) Identifies that correctly deployed STs will encourage the adoption of ST as well as improved service experiences. Therefore, for ST to be correctly deployed, adequate due diligence is required to be undertaken and followed to deliver insightful information that will assist in overall decision making. Figure 5.3 indicates the various steps involved in the due diligence process.



Figure 5.3: Types of due diligence (adopted Corporate Finance Institute, 2020:1)

Due diligence is an extensive process and should not be taken lightly, as it aims to thoroughly and completely assess the capabilities and financial performance of a solution (Stevens, 2016). SOOs undergoing a due diligence process offer higher chances of success with adopting and implementing ST.

From a buyer's perspective, due diligence enables a buyer to feel more comfortable about his or her expectations regarding a purchase. For instance, in mergers and acquisitions, purchasing a business without doing due diligence significantly increases the risk to the purchaser. From a seller's perspective, due diligence is undertaken to provide the purchaser with trust. This may benefit the seller, as going through the rigorous examination may, in fact, reveal that the fair market value of the seller's company is more than what was initially thought to be the case (Auer & Böhme, 2020). Therefore, it is not uncommon for sellers to prepare due diligence reports themselves prior to potential transactions, and outsource the effort.

SOOs in the ST space need to ask themselves these due diligence questions to be aligned from an IT perspective so as to address: i) the systems in place; ii) capacity concerns; iii) outsourcing agreements; iv) and the recovery plan of the company's IT. What software packages are being used by the company? What are the annual IT maintenance costs? What is the capacity of the usage level of existing systems? Is there a disaster recovery plan in place? (Hu & Lu, 2020).

Finding 23 (Table 4.5) indicates that improved service experiences, upskilling of staff and change management encourage the adoption of ST within the service delivery industry. Finally, it is important to understand why due diligence matters, as it assists investors and companies to understand the nature of a solution, the risks involved, and whether the solution fits with their objective. Essentially, undergoing due diligence is like doing 'homework' to help make informed investment decisions.

5.8 Theme 7: Risk

Security is defined as resilience against a threat or foreseeable harm. In this study, the security around ST and its effects on SOOs have been investigated (Kim et al., 2016). With the increased number of smart objects being used in various environments such as organisations, households and on-person wearable devices, it may result in a concerning invasion of privacy. As not all users accept tracking in exchange for full functioning and convenience or are aware that they are actually being tracked, this has been identified as a major privacy concern (Kim et al., 2016). Convenience is a major factor for the willingness to deploy ST; however, some

organisations and users seem not to mind whether these devices track their personal data or not.

Currently, ST has become an essential portion of everyday life; for instance, look at the modern smart phone as we know it. Forecasts have been made that within a few years approximately 100 billion smart devices will be in use around the world (Ahson & Ilyas, 2017). Data tracing and tracking performance is a pinnacle function in the efficiency of ST in context, such as user authentication and the provisioning of personalised content (Ahson & Ilyas, 2017). Given the high sensitivity level of personal information that can be accessed via smart devices by SOOs, this omnipresent tracking is a hot topic in relation to data security and privacy (Djenouri, Khelladi & Badache, 2020). We heard many rumours about ST devices secretly spying on their owners and the selling of user data. The escalation of users' privacy concerns, for instance, can be clearly seen from the following question: "Is Alexa really infiltrating and eavesdropping on us?"

Although security concerns continue to grow, people seem to be less concerned about their privacy when compared to the anticipated benefits of smart technology utilisation. People are willing to make trade-offs between the perceived risks and benefits of providing personal information in order to gain benefits from these technologies. The major benefits obtained from the deployment of ST within SOOs and households are efficiency, time saving capabilities, and convenience. Therefore, intelligent technology is able to offer personalised services to meet individual needs of users and provide them with the maximum possible comfort (Djenouri, Khelladi & Badache, 2020). Finding 32 (Table 4.6) states that employees can misuse STs; thus, measures need to be put in place to avoid this misuse.

5.9 Summary

The themes were discussed in context of the findings and categories derived from the study. Seven themes emerged, along with references from various sources, which included some of the participants. According to the findings and categories, the themes have been mapped per research question. The themes are: i) Digital Transformation; ii) Technology; iii) Economics; iv) Politics; v) Customer Service; vi) Due Diligence; and vii) Risk. The respective themes played a significant role in addressing the research questions, for instance, Theme 6 (Due Diligence) revealed that in order for successful adoption and implementation of ST within SOOs to take place an effective due diligence process needs to be undertaken already in the infancy stage of the digital transformation process.

Theme 1: Digital Transformation is important because it highlights that the digital gap between business and user experience is beginning to close as ST is implemented more and more by business.

Theme 2: Technology is significant because it touches on the capabilities of SaaS and how ST has positively impacted the Fintech space.

Theme 3: Economics is vital as it expresses the importance of monetary factors that need to be considered when implementing ST, and it identifies how technologies and finances tie up together to encourage ST adoption.

Theme 4: Politics is important as it addresses the principle of political factors to be considered when implementing ST. Factors such as policies and processes should be in place to guide and facilitate ST adoption.

Theme 5: Customer Service is key because it emphasizes the importance of the concept as well as the role it plays to ensure the usefulness and sustainability of technology.

Theme 6: Adequate Due Diligence is required for the successful adoption and implementation of ST within SOOs. Thus, effective due diligence processes must be followed correctly in the infancy stage of a digital transformation process.

Theme 7: Risk is vital because it addresses the importance of mitigating risk in terms of implementing and adopting various technologies and how this can best be managed without taking on too much risk.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

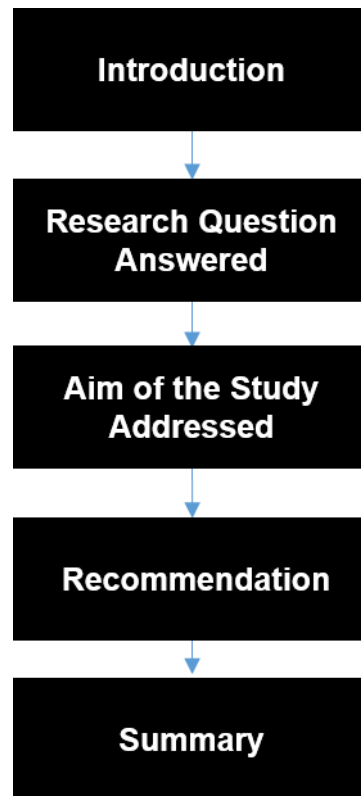


Figure 6.1: Chapter Six layout

6.1 Introduction

Chapter six (Figure 6.1) addresses the research questions while suggesting recommendations based on the considerations of the conducted research.

6.2 Research questions answered

RQ1: What are the factors affecting the adoption of smart technology for service delivery in organisations?

The factors affecting the adoption of smart technology for service delivery in organisations are listed below:

- i) Economic factors are more important than technological factors when deploying ST within service-oriented organisations.
- ii) Politics can hinder business and technological growth necessary to drive innovation and competition among service-oriented organisations.
- iii) Correctly implemented ST has the potential to improve service delivery within service-oriented organisations.
- iv) ST efficiency can improve organisations in service-oriented environments.
- v) Government regulations need to be in place in order to manage technological organisations due to their increased growth rate and speed of technology.
- vi) When deployed incorrectly, ST can fail and produce negative economic outcomes within service-oriented organisations.
- vii) The majority of the participants do think the deployment of ST will have positive economic outcomes within service-oriented organisations.

RQ2: How can smart technology influence customer satisfaction within service-orientated organisations?

ST can influence CS within SOOs through the following considerations:

- i) ST has the potential, and is already creating, a convenient environment for customers.
- ii) ST assists organisations with providing faster and personalised responses to customers.
- iii) ST allows organisations to fail fast and fail cheap, as they afford service-orientated organisations opportunities to try things in digital environments without any negative impact in live or physical environments.
- iv) The combination of physical and digital elements will help to create a more sensorial customer experience which captivates modern consumers who live both online and offline, while improving the value of service delivery.

- v) ST lets organisations respond faster to feedback, whether it is positive or negative; thus, it improves service delivery value.
- vi) Organisations that rely too heavily on technology and not on their people within the organisation stand the chance to affect their organisations negatively; therefore, getting that balance right and enabling people to leverage their technology is more important than putting technology first.

In conclusion, the definition of the concept 'Smart Technology' is comprehensive and varies significantly amongst stakeholders.

6.3 Aim of the study

The aim of study was to explore the influence of smart technology in transforming service delivery environments. A service-oriented approach was explored in various environments to identify the factors influencing ST adoption within SOOs, and to discover how ST influences CS within SOOs. This was achieved by answering the two main research questions stated in section 6.2.

6.4 Recommendations

The outcomes of the study point to various opportunities and challenges that affect the adoption of ST in transforming service delivery environments. Therefore, recommendations for effectively adopting STs in order to transform service delivery environments are summarised as follows.

- i) The successful adoption of ST depends on how leadership within SOOs implement this technology strategically. Participants are in agreement that ST is valuable to organisations, but adequate due diligence is required prior to implementing these technologies.
- ii) A resilient digital roadmap is required to adopt and successfully sustain the implementation of ST in the long term. Thus, a weak or non-existent digital roadmap will place an organisation's digital integrity at risk and may negatively affect an organisation's digital environment.
- iii) Government's role in regulating ST and its use to mitigate the potential abuse by organisations is crucial to the integrity and reliability of ST. Inadequate governance has been observed and witnessed in the creation of unproductive and inefficient results; thus, implementing good governance is paramount to the successful adoption of ST within SOOs.
- iv) Effective and efficient service delivery, which can be incorporated into the digital transformation plan used to adopt ST, is important to SOOs, as it may lead to improved CS and customer experience in service-oriented organisations.

- v) Conclusively, a corporate and social understanding of the benefits and concerns of ST within society needs to be managed through expectations that are agreed on by both corporate and social environments from the very beginning, rather than at a later stage when it may be too late to revert back, and when potential damage has already been done, for example, a breach of personal privacy.

6.5 Summary

This research explored the adoption of ST in transforming service delivery environments. Fourteen (14) participants from twelve (12) organisations were interviewed in order to address the research questions. Chapter Six provides answers to the research questions while offering recommendations based on the considerations of the conducted research. For **RQ1**, “What are the factors affecting the adoption of smart technology for service delivery in organisations?” seven factors influencing the inefficiency of ST within SOOs were identified. These factors are summarised as follows:

- i) Economic factors are more important than technological factors when deploying ST within service-oriented organisations.
- ii) Politics can hinder business and technological growth necessary to drive innovation and competition among service-oriented organisations.
- iii) Correctly implemented ST has the potential to improve service delivery within service-oriented organisations.
- iv) ST efficiency can improve organisations in service-oriented environments.
- v) Government regulations need to be in place in order to manage technological organisations due to their increased growth rate and speed of technology.
- vi) When deployed incorrectly, ST can fail and produce negative economic outcomes within service-oriented organisations.
- vii) The majority of the participants do think the deployment of ST will have positive economic outcomes within service-oriented organisations.

RQ1 has been addressed through the various factors that have been listed above. For **RQ2**, “How can smart technology influence customer satisfaction within service-orientated organisations”, six outcomes were identified. These outcomes are as follows:

- i) ST has the potential, and is already creating, a convenient environment for customers.
- ii) ST assists organisations with providing faster and personalised responses to customers.

- iii) ST allows organisations to fail fast and fail cheap, as they afford service-orientated organisations opportunities to try things in digital environments without any negative impact in live or physical environments.
- iv) The combination of physical and digital elements will help to create a more sensorial customer experience which captivates modern consumers who live both online and offline, while improving the value of service delivery.
- v) ST lets organisations respond faster to feedback, whether it is positive or negative; thus, it improves service delivery value.
- vi) Organisations that rely too heavily on technology and not on their people within the organisation stand the chance to affect their organisations negatively; therefore, getting that balance right and enabling people to leverage their technology is more important than putting technology first.

RQ2 has been addressed through the various outcomes that have been listed above. ST is and will be influencing service-oriented environments. ST is developing fast and will carry on in improving the delivery of services to the clients of SOOs.

CHAPTER SEVEN: REFLECTIONS AND FUTURE RESEARCH

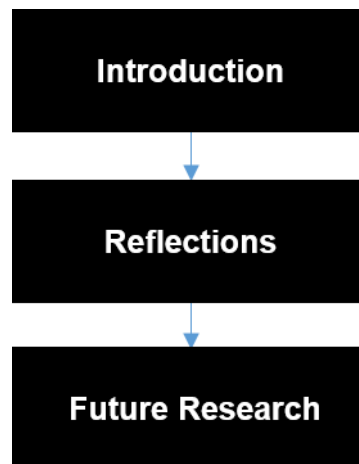


Figure 7.1: Chapter Seven layout

7.1 Introduction

In Chapter Seven (Figure 7.1), the research reflections and future research as a result of the considerations of the conducted research are provided.

7.2 Reflections

The study adopted a case study approach along with conducting interviews to address the research problem. Exploratory research was undertaken to identify the adoption of ST in order to transforming service delivery environments. The study's results, findings and themes were presented as precise as possible, resulting from the interview answers, relevant to the subject matter, obtained from 14 participants. The outcomes are distinct to the participants and the respective organisations they represent.

Prior to, and throughout the interview process, a fair share of challenges were experienced, such as participants cancelling interviews at the last minute after weeks of effort to secure interview dates. Technological mechanisms such as Skype and WhatsApp calls were utilised for interviews that could not be conducted in-person due to logistical constraints. Overall this was an exciting phase of the project, as it instilled accountability, drive and commitment within the researcher. Actions that could have been executed better include more effective multi-tasking and time management, as this would have assisted in improving the overall turnaround time of the study. The researcher obtained hands-on experience in the field of study and a stronger, more confident perspective on the subject matter.

7.3 Future research

In terms of smart technologies, it is proposed that future research focus on the impact of ST in the 22nd century, as knowledge gaps regarding this impact have been uncovered during the research. Suggestions for further research are summarised as follows:

- 1) Extensive exploration of the role ST will play in shaping day-to-day operations of organisations in service-based environments is required. STs are becoming popular tools for use in improving organisational objectives while influencing productivity in a helpful manner. Further research could develop benchmarks for increased productivity together with performance strategies to create digital sustainability. The monetary and economic benefits of ST for organisations that were among the first adopters and responders of these technologies could be explored.
- 2) Additional methodological effort is required to identify and capture the impact on, and outcomes of ST in social and domestic environments; thus leading to further social analysis and exploration of the impact STs may have on the livelihoods of consumers and their dependence on the technologies.
- 3) Notwithstanding a longer-term study being methodologically demanding, it may be beneficial to quantify the impact of ST in organisational and social environments through key indicators such as technology return on investment (RoI), overall sustainability, and value created.
- 4) A significant question has been identified following the completion of data collection, namely, "What is the impact of long-term ST consumption and expenditure on organisations which adopted these technologies?"
- 5) Finally, future research could focus on addressing the limitations of the current research, such as sample size and the scope of the analysis and discussion. A larger, global sample size and scope may contribute important findings to the pool of knowledge due to the global nature of such research.

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APPENDIX A: CONSENT FORM

Below are screenshots of four (4) of the fourteen (14) consent forms that were signed by the participants. Please note that for ethical reasons, the participant's personal information has been blanked out at their request.




iOCO
INNOVATION. PEOPLE. TECHNOLOGY.

I **Alex Pryor** in my capacity as Business Unit Manager at iOCO give consent in principle to allow **Xirimbi Baloyi**, a student at the Cape Peninsula University of Technology, to collect data in this company as part of his M Tech (IT) research. The student has explained to me the nature of his research and the nature of the data to be collected.

This consent in no way commits any individual staff member to participate in the research, and it is expected that the student will get explicit consent from any participants. I reserve the right to withdraw this permission at some future time.

In addition, the company's name may or may not be used as indicated below. (Tick as appropriate.)

	Thesis	Conference paper	Journal article	Research poster
Yes	Yes			
No		No	No	No



Alex Pryor

4 September 2019

☎ +27 (0) 11 607 8300 ☎ 824 Bunkers Park, Gillooly's View, ☎ www.ioco.co.za
☎ +27 (0) 11 606 9024 Chaberton Lane, Bedfordview, 2007

I

I Kevin Buret, in my capacity as Director: Strategic at Sukema IP Co give consent in principle to allow Xirimbi Baloyi, a student at the Cape Peninsula University of Technology, to collect data in this company as part of his M Tech (IT) research. The student has explained to me the nature of his/her research and the nature of the data to be collected.

This consent in no way commits any individual staff member to participate in the research, and it is expected that the student will get explicit consent from any participants. I reserve the right to withdraw this permission at some future time.

Research will be done on the time and dates as agreed with the student.

In addition, the company's name may or may not be used as indicated below. (Tick as appropriate.)

	Thesis	Conference paper	Journal article	Research poster
Yes	YES	YES	YES	YES
No				

Kevin Buret

20 August 2018

<insert name>>

<<insert date>>



[Redacted signature]

I **Jonathan Kaija** in my capacity as **Innovation and Insights Lead** at [Redacted] give consent in principle to allow **Xirambi Baloyi**, a student at the Cape Peninsula University of Technology, to collect data in this company as part of his/her M Tech (IT) research. The student has explained to me the nature of his/her research and the nature of the data to be collected.

This consent in no way commits any individual staff member to participate in the research, and it is expected that the student will get explicit consent from any participants. I reserve the right to withdraw this permission at some future time.

In addition, the company's name may or may not be used as indicated below. (Tick as appropriate.)

	Thesis	Conference paper	Journal article	Research poster
Yes				
No	✓	✓	✓	✓

[Redacted signature]

__February 19, 2019__

__Jonathan Kaija
Innovation and Insights Lead, [Redacted]__

Office [Redacted]
Mobile [Redacted]
Mail [Redacted]

Cape Town Office
2nd Floor MontClare Place
Claremont Main Road
Claremont
7708

I Stephen Zucknovich, in my capacity as CTO at Kurtosys give consent in principle to allow Xirimbi Baloyi, a student at the Cape Peninsula University of Technology, to collect data in this company as part of his M Tech (IT) research. The student has explained to me the nature of his research and the nature of the data to be collected. This consent in no way commits any individual staff member to participate in the research, and it is expected that the student will get explicit consent from any participants. I reserve the right to withdraw this permission at some future time. In addition, the company's name may or may not be used as indicated below. (Tick as appropriate.)

	Thesis	Conference paper	Journal article	Research poster
Yes	✓	✓	✓	✓
No				



Stephen Zucknovich
7 October 2019

APPENDIX B: PARTICIPANT CONSENT LETTER



Introductory letter for the collection of research data

Xirimbi Baloyi is registered for the M Tech (IT) degree at CPUT 218042000. The thesis is titled, The influence of smart technologies within service oriented organisations, and aims to explore the influence of smart technologies in transforming service delivery environments. The supervisor for this research is: Dr AC de la Harpe

In order to meet the requirements of the university's Higher Degrees Committee (HDC) the student must get consent to collect data from organisations and private individuals which they have identified as potential sources of data. In this case, the student will use interviews along with Semi-structured-questionnaires to gather data.

If you agree to this, you are requested to complete the attached form (an electronic version will be made available to you if you so desire) and print it on your organisation's letterhead.

For further clarification on this matter please contact either the supervisor identified above, or the Faculty Research Ethics Committee secretary (Ms V Naidoo) at 021 469 1012 or naidoovve@cput.ac.za.

Regards

Dr AC de la Harpe

Supervisor

IT department

CPUT

delaharpe@cput.ac.za

021 4603627

18 February 2019

APPENDIX C: INTERVIEW GUIDE TEMPLATE



Semi-structured-questionnaires

Interview schedule:

Introductory remarks:

Technology is at the epicentre of the day-to day livelihood of most people giving people the choice to utilise it. Technology has progressed in many ways. One such way is through Smart Technologies (ST). ST are expressed as technologies that allow sensors, databases, and wireless access to collaboratively sense, adapt, and provide for users within the environment (ST hold vast potential for (SOO) Service Oriented Organisations. The study will be examining the impact of ST within (SOO).

The aim: The aim of the study is to explore the influence of ST in transforming service delivery environments.

We are kindly requesting answers to the questions listed below in your good faith. Your answers will be used specifically for this study purposes only and they will be treated with the highest degree of confidentiality and privacy. Also participation in this interview is voluntary and allows anonymity as well as autonomy.

Section A: participant's details

Name: _____	Date: _____
surname: _____	Contact No: _____
Position: _____	

<p>SRQ1.2</p> <p>What are the economic factors influencing the efficacious deployment of smart technologies within service-oriented organisations?</p>
<p>IQ 1.2.1</p> <p>Do you think the deployment of ST will have positive economic outcomes within service-oriented organisations?</p> <p><u>Comment:</u></p>
<p>IQ 1.2.2.</p> <p>Do you think it is economically viable to implement smart technologies within in your organisation?</p> <p><u>Comment:</u></p>
<p>IQ 1.2.3</p> <p>If any what kinds of smart technologies have you been exposed too?</p> <p><u>Comment:</u></p>

<p>RQ 2:</p> <p>How can smart technologies influence customer service within service-oriented Organisations?</p>
<p>SRQ2.1</p> <p>How can smart technologies influence customer satisfaction within service-oriented organisations?</p>
<p>IQ 2.1.1</p> <p>Do you think smart technologies will play an important role in the future of customer service</p> <p><u>Comment:</u></p>

Section B: Questions



<p>RQ1: What are the factors influencing the inefficiency of smart technologies within Service Oriented Organisations?</p>
<p>SQ1.1 What are the technological factors influencing the efficacious deployment of smart technologies within service-oriented organisations?</p>
<p>IQ 1.1 .1 What do you think is more important between economic factors and technological factors in regards to influencing the efficacious deployment of smart technologies within service oriented organisations? <u>Comment:</u></p>
<p>IQ 1.1.2 Do you think political factors can influence the deployment of smart technologies within service-oriented organisations? <u>Comment:</u></p>
<p>IQ 1.1.3 Do you think smart technologies have the potential to address and improve service delivery problems within service-oriented organisations? <u>Comment:</u></p>

<p>IQ 2.1.2</p> <p>Do you think encouraging the adoption of smart technologies within the service delivery industry to enable impactful investments will help lower operational costs?</p> <p><u>Comment:</u></p>
<p>IQ 2.1.3</p> <p>Do you think encouraging the adoption of smart technologies within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?</p> <p><u>Comment:</u></p>

<p>SRQ 2.2</p> <p>How can smart technologies influence customer experience within service-oriented organisations?</p>
<p>IQ 2.2.1</p> <p>Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?</p> <p><u>Comment:</u></p>
<p>IQ 2.2.2</p> <p>Do you think smart technologies will help improve the value of service delivery through the enhanced quality of customer interactions?</p> <p><u>Comment:</u></p>
<p>IQ 2.2.3</p> <p>Do you think smart technologies can contribute and influence service delivery environments in a negative way?</p> <p><u>Comment:</u></p>

APPENDIX D1-D14: INTERVIEW TRANSCRIPTIONS P1-P14

APPENDIX D1: INTERVIEW TRANSCRIPTION P1

IQ 1.1.1 What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

Me: What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

P1: Economic - the reason I would say that it essentially defines the parameters within which you need to operate. An economic factor is important because it is based upon what your criteria for success will be.

Me: Ok

P1: Why I say I favour that instead of technological factors is because technology changes so rapidly, the deployment of a single technology 6 months later is bound to be redundant; so to chase technology often you will land up overcompensating.

IQ 1.1.2 Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

Me: Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

P1: Yes, the Huawei thing was quite an extraordinary situation, where politics is heavy handily leaning into the private sector; no one would have predicted that, but I would say on a governmental level they could reference on a basis of governance and protection of personal information.

Me: Ok

P1: Internal policy is very much on the same base – how and where information is being stored. Is it secured? Can it be compromised? How we manage information.

IQ 1.1.3 Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

Me: Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

P1: So yes, I think smart technologies has potential to improve service delivery on the basis that they can impact process efficiency very accurately. They can allow for an accurate measure of performance over time of individuals and processes as well and allows for two-way communication between people on the ground and the organisations and processes that define them so that these processes can be diagnosed as performance and suitability and the life cycle of their project.

Me: Thanks for that very insightful answer.

IQ 1.2.1 Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

Me: Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

P1: Yes, on the basis that they are deployed correctly. Smart technologies can fail in terms of implementation, so correct deployment will definitely yield good results if it is designed around business outcomes sufficiently with their long term life cycle approach in mind.

IQ 1.2.2 Do you think it is economically viable to implement smart technology within in your organisation?

Me: Do you think it is economically viable to implement smart technology within in your organisation?

P1: Yes, on the basis that where we implement our technologies we do so on the back of a comprehensive business case understanding what the return on investment would be relative to very quantifiable effectiveness, so in the case of smart technology, is going to return a benefit to us in terms of operational efficiency or productivity of our employee or the ability to have greater visibility over certain operations.

Me: Alright

P1: So backed on a sufficient business case, we do find that the deployment smart technology is valuable, but not always.

IQ 1.2.3 What kinds of smart technology has you been exposed too, if any?

Me: What kinds of smart technology has you been exposed too, if any?

P1: Internet of Things guarantees we are looking at artificial intelligence, machine learning, cloud computing and processing, and IoT architecture and systems integration. Also, AR, blockchain and robotics process automation (RPA).

IQ 2.1.1 Do you think smart technology will play an important role in the future of customer service?

Me: Do you think smart technology will play an important role in the future of customer service?

P1: Yes, absolutely, I think they are fundamental to the future of CS not just in the point of view of the technologies themselves, but also understanding and forecasting demand overtime; so now organisation and businesses can adjust their practices to move with the times as opposed to being reactive and allows for a more proactive approach.

IQ 2.1.2 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

P1: Yes I do think that would happen, but again, it needs to be implemented in the correct way so just buying a piece of technology is not going to solve the problem so what you need to do in terms of operational costs, we would need to link technology with process and link process with people, so you need to get all of those aspects working together because technology implemented on its own won't work unless it is influenced in a way in which who are responsible for deploying the service are conducting themselves. So, it needs to form behavioural change, which leads to augmented behaviour that makes things easier to do to allow for a greater alignment for more efficient processes and that will result in operational efficiencies.

IQ 2.1.3 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

P1: Yes, I do I suppose the great thing about the correct deployment of technologies is it allows for a whole host of improved scenario planning and forecasting. The issue of forecasting and scenario planning, the reason why that's important, it means that you can get ahead of the supply and demand curve so of course service experience is a lot about supplying the demand and meeting the demand and fixing the problems. A cloud environment enabled by AI is that you can do a whole host of digital scenario playing which effectively allows the organisations to fail fast and fail cheap, so they try things in a digital environment is much easier than to try things in a physical environment.

IQ 2.2.1 Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

Me: Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

P1: E-commerce a digital stall suddenly became alive in a big way because of one important factor, introducing the element of convenience. The element of the retailers understand[ing] the personal requirements of the shopper on outcomes-based shopping experience. so I go into the shop and I am immediately presented with options that are aligned with my preferences because of my previous search history, then they know who I am or what I like which means that my ability to find what I need is made much easier and that obviously brings about a whole host of benefits; but [it] also helps me if the store is big enough to do a rapid search for items and elements which I need based on a digitised inventory, which is made a bit different in a physical store where you have to walk up the aisles looking for things and the person on the ground doesn't know who you around the experience is very much average and you are not meant to feel vision some and the process is a bit more cumbersome and difficult. But what is interesting in recent times is that main players in online shopping, take Amazon for example, the biggest player, have recognised that the needs actually need to be in the physical domain so they started opening actual physical shops again because at the end of the day if you look at all the statistics, almost 70% of shopping is still done in a physical store. So it's about finding the perfect balance, its about linking the question about bridging the gap and when you get a physical environment it aligns for the same that digital aligns for which is understanding what the consumer needs and providing it with the best experience, then you have a perfect scenario which is why the physical store is experiencing something of a recessions is back correctly by smart shopping is the next big thing.

IQ 2.2.2 Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

Me: Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

P1: The ability to capture client interaction has increased the quality, so the ability to take data from an interaction and use it fully, that will help to improve the service delivery. You can't always guarantee that the customer is going to be delivering great interaction or in a way that you can utilise but once the process is set it can extract from what you require that can certainly benefit you.

IQ 2.2.3 Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

Me: Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

P1: Absolutely, by improper use of data and then of course underestimating complexity of permutation.

APPENDIX D2: INTERVIEW TRANSCRIPTION P2

IQ 1.1.1 What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

Me: What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

P2: The economic factors within the company, because they can be such a prohibition or they can be prohibiting change and progress in a technical space immensely; so I mean we see that here also because of financial restrictions.

Me: Ok

P2: I am not always able to go with the best possible solutions that would really help us to excel and get more efficient because we would be saving money in the long run but because we don't have it in the short run, we can't even get started.

IQ 1.1.2 Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

Me: Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

P2: Technology changes, so it needs to be driven from the top down and then to be basically filtered into the different departments the strategy of how it is rolled out and people are being upskilled, which areas to focus on first because you can't just roll out a technology like that everywhere, but it should come from EXCO.

IQ 1.1.3 Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

Me: Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

P2: I definitely think so, if implemented correctly, that they can make organisations a lot more efficient, a lot more standardised, smarter, it can make the information flow faster and also help us organise low teams in a more standardised way. So this is what I was thinking about, if we would implement a smart a tool which would help us drive decisions and follow up leads and identify would clients need to mind to get more work out of them or more projects out of them.

IQ 1.2.1 Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

Me: Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

P2: If implemented correctly and if it is solving a problem; so if it's just implemented for the implementation sake, yes, we are now using a smart technology. I don't think so but I think if you identify the problem and you then map it against the correct solution to solve the problems and become more efficient, then it will definitely have positive economic outcomes and make everything run a lot smoother.

IQ 1.2.2 Do you think it is economically viable to implement smart technology within in your organisation?

Me: Do you think it is economically viable to implement smart technology within in your organisation?

P2: At the moment if it is minimally invasive to how we run, yes, if it would mean changing the operations of the entire organisations around, most probably not at this point.

IQ 1.2.3 What kinds of smart technology has you been exposed too, if any?

Me: What kinds of smart technology has you been exposed too, if any?

P2: Definitely AR, Virtual Reality (VR) learning content, machine learning and recommendation engines on a learning basis, so that is something that we implement with clients a lot, that we basically identify knowledge gaps for their staff or gaps in skills that they would need to perform a certain job and we would push learning to them based on that gap.

Me: Very interesting.

P2: Saudi on the industry 4.0 sector expose to industry 4.0 production calls IoT and then also the, obviously, the advisory tool that I just talked about with you which is called clever.

IQ 2.1.1 Do you think smart technologies will play an important role in the future of customer service?

Me: Do you think smart technologies will play an important role in the future of customer service?

P2: If leveraged correctly again, so can be used to train staff more efficiently, so definitely it really depends on how it is implemented; it needs to solve problems; it needs to really impact the company; and it needs to impact the client at the same time.

IQ 2.1.2 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

P2: Yes, so definitely, because it will provide additional intelligence at a way quicker pace than people can provide it and it could help make decisions; so I base this answer based on the decision making challenge that we have here at TTRO and it would make things a lot faster, a lot smoother, a lot possible cost effective, you might even be able to reduce staff based on that.

IQ 2.1.3 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

P2: Definitely one of the key pillars when implementing that, would be adoption of staff upskilling of staff change management of the organisation.

Me: OK great.

P2: Upskilling of the staff but also driving it down from the top basically very important.

IQ 2.2.1 Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

Me: Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

P2: Yes it could actually bridge that gap, so one thing that we are currently experimenting with in the AR, VR space, is for an on example an boarding get to know TTRO experience that they could do when they are here, while they are here at TTRO waiting for whoever they are visiting where they could already answer certain questions, where they could get insight to what they need, who they are, and so forth, so that could tie nicely with how we position ourselves later on and how we continue the engagement with the client back then after that; another interesting example is a friend of mine

who is running a start-up in Woodstock and basically it is an app that connects service providers from the community to people who need specific services in the community.

Me: Awesome.

P2: The app actually helps him to provide customers with better opportunities to see what it is that they could be getting through the app, how much does it cost, how long will it take, which person will take care of it, so it creates this pretty much personalised atmosphere where your particular needs are addressed without any human intervention, so you get a lot of information out of it before you even engage with someone.

IQ 2.2.2 Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

Me: Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

P2: If ST is implemented with a purpose it must be implemented with a purpose and not just for the sake of using smart technology. It could help companies to be a lot more standardised and also to operate with more quality, like if they actually set and define standards, everybody can work based on that smart technology and can actually help to move us forward.

IQ 2.2.3 Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

Me: Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

P2: I think so, definitely yes, but that is if first of all you choose the wrong solution for the problem, if you literally just implemented because you have money left over and you just want to invest in technology, but you don't think whether it makes sense would it really support the organisation, but then also, if you rely too heavily on the technology and not on your people anymore, so getting that balance right and enabling people to leverage their technology for their own personal growth and their own personal success as a company.

APPENDIX D3: INTERVIEW TRANSCRIPTION P3

IQ 1.1.1 What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

Me: What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

P3: The economic factors, because for me a struggling economy will find it more difficult to apply resources that are necessary for the development of smart technology that is required for scaling the operations for any organisations.

IQ 1.1.2 Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

Me: Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

P3: Political regulations can stunt the growth of businesses and hinder entrepreneurs and start-ups that are necessary to drive innovations and competition.

Me: Ok

P3: Government relations do need to be in place, so that these guys do not abuse their power; however, there needs to be a massive shift in the speed because obviously, as we said before, the speed of technology has gone so fast, government needs to be able to keep up with that so that they can manage it properly.

IQ 1.1.3 Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

Me: Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

P3: Yes, in the right way in which digital technologies are guaranteed to improve inefficiencies; here you want to make sure that you are implementing technology in the right way for the right reasons, not just doing it for gimmick. So if you are too caught up in the hype that you just launched something, this is going to solve everything, but you don't actually know what you are dealing with or how the goal fitted you would probably do more damage than good.

IQ 1.2.1 Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

Me: Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

P3: If they are appropriately deployed, smart technology can save money and the skills development will keep an organisation at the pinnacle of service delivery.

IQ 1.2.2 Do you think it is economically viable to implement smart technology within in your organisation?

Me: Do you think it is economically viable to implement smart technology within in your organisation?

P3: No, not in a way that would economically justify its deployment in terms of its return on investment.

IQ 1.2.3 What kinds of smart technology has you been exposed too, if any?

Me: What kinds of smart technology has you been exposed too, if any?

P3: Deep knowledge of Beacon, NFC, AR, VR, RFID, and then just other various connected devices; this obviously comes from various projects which we do with our clients and the solutions which we have proposed to solve their different problems.

IQ 2.1.1 Do you think smart technologies will play an important role in the future of customer service?

Me: Do you think smart technologies will play an important role in the future of customer service?

P3: Yes, basically because as more things are becoming digital, there are companies realising that they can reach their customers on a personalised level through technology; there is going to be a massive amount of investment in this and ultimately that is going to create an environment which is just going to make things so convenient and easy which is a major driving factor of what is going to be this whole gig economy.

IQ 2.1.2 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

P3: Yes, obviously, with scale and by developing internal skills of the organisation, an organisation can see a good return on investments and position themselves in a good position for future.

IQ 2.1.3 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

P3: Yes by developing the necessary skills and internally developing smart technology, so organisations can position themselves to be the disrupting force within the industry.

IQ 2.2.1 Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

Me: Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

P3: Yes, but in the right way in which digital technologies can guarantee to improve inefficiencies; one of the big topics we have here is digitising Brick and Mortar stores, we call it digital so the marriage between digital and physical space, so it's very digital technologies into the physical space.

IQ 2.2.2 Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

Me: Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

P3: Yes personalisation and customisation generates more sustained engagement, so I think this follows on to what I said previously like the combination of physical and digital elements in a store to create more sensorial customer experience that captivates modern consumers who live both online and offline.

IQ 2.2.3 Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

Me: Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

P3: Potentially yes, if adolescents systems are incorrectly installed at the rapid rate at which things are moving, you are at risk of installing a technology that is perhaps untested or you are at risk of installing a technology, which some years down the line it is completely inefficient and it is now old school and you have to update.

APPENDIX D4: INTERVIEW TRANSCRIPTION P4

IQ 1.1.1 What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

Me: What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

P4: There is enough technology to go around, I mean technology changes every single day, there is no shortage of technology, but their certainly are economic factors that will effect or have a negative effect the deployment of smart tech.

Me: Ok

P4: About economic factors, but we should talk about social economic factors you know, where we have labour unions and this becomes a major issue because you want things to run better and you want to for instance monitoring personal.

IQ 1.1.2 Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

Me: Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

P4: Political factors can influence one never knows what; the real political factors are behind the politicians so I think that a lot of decisions are made not just purely from [a] politics point of view but it is to enrich certain people, they have the power to drive the technology away or to drive the technology in.

IQ 1.1.3 Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

Me: Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

P4: Absolutely, I think if the technology is understood and adopted in the right way, if the problems and the challenges were understood properly, we could then apply the right technologies to resolve those issues.

Me: Ok

P4: There is a lot of economic and political factors that are influencing all of this; we don't have a true clear picture of the issues that we face with our service delivery service-orientated organisations. I think a lot of it is hidden away, a lot of it has just been like that forever, and people just don't have a grasp of it or they don't want to change anything but I do think that smart technology could play a massive role in the service delivery, absolutely.

IQ 1.2.1 Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

Me: Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

P4: Certainly, if it is deployed correctly with proper planning and you have a strategy behind it, you know what you are actually trying to achieve, then absolutely.

IQ 1.2.2 Do you think it is economically viable to implement smart technology within in your organisation?

Me: Do you think it is economically viable to implement smart technology within in your organisation?

P4: In a bigger group organisations, absolutely, it's a similar analogy to the refuse bin; there are so many errors where one can improve, monitor, manage, cut costs, but essentially, it all comes down to the data, its learning and knowing, what you don't know and using it to improve.

IQ 1.2.3 What kinds of smart technology has you been exposed too, if any?

Me: What kinds of smart technology has you been exposed too, if any?

P4: Smart cameras, analytics, artificial intelligence from sensors and smart metering, smart transport systems and IoT.

IQ 2.1.1 Do you think smart technologies will play an important role in the future of customer service?

Me: Do you think smart technologies will play an important role in the future of customer service?

P4: I do absolutely without a doubt; I think it is a great example where everything is you go online.

IQ 2.1.2 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

P4: Being more effective and efficient which the outcome of that is generally lowering operational costs, but again, as organisations we need to identify where the potential issues are because if you don't identify the bottle necks then you don't know where to deploy the technology.

Me: Ok

P4: Look at it as a point of view where we introduce technologies and we have less shrinkage of items in the retail sectors, less shrinkage to lower; ok it's not going to lower, but yes, it would. I have less manual things to do to check stock coming in now so therefore my operational costs are less.

IQ 2.1.3 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

P4: Yes, I do I think we are basically talking about investments into organisations that are starting to use technologies, smart and being innovative and improving service delivery.

Me: Ok

P4: The minute they start seeing good results, then suddenly they are willing to increase it, and then suddenly money comes your way, so this is [a] great innovation.

IQ 2.2.1 Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

Me: Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

P4: Yes, it's starting to; it's got a long way to go but in some areas you obviously happy with a lot faster than in others; if you look at smart innovation and technologies in the financial sector, its miles ahead of some other sectors.

Me: Ok

P4: Access to the VR technology, that's a costly item, but those who do have it will probably be the higher end players that have the higher end of the market.

IQ 2.2.2 Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

Me: Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

P4: Yes, I do I think your example of Wi-Fi is great to use as an example because when we go out to eat for dinner, we have kids and we generally like to go to a place that has free Wi-Fi because the kids sit on their i-pads and they [are] happy, so yes, it makes a difference.

IQ 2.2.3 Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

Me: Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

P4: Yes, it could, if your experience becomes an impersonal thing whereas certain people, they like to interact with humans.

APPENDIX D5: INTERVIEW TRANSCRIPTION P5

IQ 1.1.1 What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

Me: What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

P5: Economic factors apply to everything, even in the first question: what did I bring up? What are the costs? The economic factors apply to any business.

Technology itself might have a big economic impact, that's the reason why you are doing it until that's in place; you are going to have to have these armies of people around to train people, deal with bangs to be able to deal with the unexpected side effects.

I would say technology factors is what's driving it, economic factors is what determines the speed.

Me: Thanks for that answer.

IQ 1.1.2 Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

Me: Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

P5: Politics and government can influence this a great deal, but fundamentally, the way they do that is through economics; they just basically make an approach or an adoption of a technology uneconomical because it costs.

Me: Ok what about 5G?

P5: 5G has been slowed down because of the decisions made by the United States for external companies, but politics can also become an enabler, in other words, having incentives for technology development within the country can in fact cause the building of plants.

IQ 1.1.3 Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

Me: Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

P5: Yes, of course, and it basically was saying that technology speeds up service delivery with quality.

IQ 1.2.1 Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

Me: Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

P5: Yes, I think assuming there isn't a drag on adoption, assuming that the economics work, the parts of smart technology is more efficient work than product outcomes per service-orientated organisations.

IQ 1.2.2 Do you think it is economically viable to implement smart technology within in your organisation?

Me: Do you think it is economically viable to implement smart technology within in your organisation?

P5: Yes we are doing it obviously fine; we are a technology company internally based on the employees and on what percentage of that costs, which is basically an overhead to a company and is impacting our margins. We make those decisions using all that stuff and then adopt; within our

company you see that we adopt things very quickly, we determine that it is economically feasible to make a change and we make it quickly.

IQ 1.2.3 What kinds of smart technology has you been exposed too, if any?

Me: What kinds of smart technology has you been exposed too, if any?

P5: Elastic services and AWS.

IQ 2.1.1 Do you think smart technologies will play an important role in the future of customer service?

Me: Do you think smart technologies will play an important role in the future of customer service?

P5: Yes, it is really intelligence on how the customer is behaving.

IQ 2.1.2 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

P5: Absolutely! The biggest thing with cloud delivery now is the elastic behaviour which is effectively paying for what you use and the economics of that are not so out of whack that people can't do it, so typically, there is a base which you have to enter into, you see technology because it is deployed so widely and the SaaS, Software as Service model, is working so well even smaller players can use these elastic services, so smaller developers can sign up AWS accounts as an example and start developing your software and have very small bills so it enables the building of new companies.

IQ 2.1.3 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

P5: Yes, so companies need to constantly be investing and see how those investments actually improved the metrics that the measure their business is at right; so now, that is experience, that's customer relationship, that's vendor management, all the things that effect a business, those metrics all have to be in full view when you are making investments and lack of investments will seriously put you at a disadvantage with your competitors.

IQ 2.2.1 Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

Me: Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

P5: Sure, you just have to look at these smart basically wearable devices where that is technology that allows users to allows people to really monitor how they working out, how effective that workout is; they are looking at their heart rate, you can see further innovation where they are actually looking at their blood chemistry so totally.

IQ 2.2.2 Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

Me: Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

P5: Yes, of course, as customers themselves will start consuming smart technologies they are going to be relying on those to actually help them interact with other service delivery so, for example,

everyone is using their cell phones now to do their banking; I can see that the mobile devices now have an increasing role and interact with other deliveries that they are expecting whether that is on a fashionable or motor site.

IQ 2.2.3 Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

Me: Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

P5: There is a dark side to all this; this is all the ability for hackers to figure out what's going on between conversations [to] be able to hijack your identity.

Technology can be exploited for non-productive uses, I would say, and that's kind of the dark side of all this and having an understanding of that and protecting it is one of the things that need to happen when you are deploying these software.

APPENDIX D6: INTERVIEW TRANSCRIPTION P6

IQ 1.1.1 What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

Me: What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

P6: 2 years ago the execs, the CEO, and the CFO were in my opinion very cost conscious at the expense of not looking at the opportunity what this investment would allow. I do think that with staff turnover and with millennials, they won't necessary stick around for as long as what people did 10 or 15 years ago, so you have got to look at more robotic processors.

At all those things so we want to do this in parallel over the next year or 2 so that the total dependency on a human being on the other side 24/7 is not really required.

I don't think you can separate the two; no, organisations in its largest form would have endless amount[s] of money. What I do like that I see more and more companies doing and it is what we are doing as well, we ensure that whatever technology decision we make, its underpinned by a business requirement.

The days of having a lab where you just worked on stuff because the new functionality [is] cool, that is truly over so you need your business strategy and then you actually put your application or technology strategy together based on what the plan or the strategy or vision is for the next 2 to 5 years.

Me: Thank you.

IQ 1.1.2 Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

Me: Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

P6: Yes, so for example there's some policies that are going to be released soon from government.

IQ 1.1.3 Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

Me: Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

P6: Yes, so a large portion of what we need to do at [company name removed] is we need to ensure that when an order is placed, we minimise the time it takes for that stock to get to the reseller; the reason for that is you have probably heard about Just-In-Time Delivery, people don't have to have stock sitting on their floors for weeks; the concept of direct store delivery and an improved transportation planning capability has become very key.

Heineken, if somebody places an order they can actually fulfil that order within 24 to 48 hours, so what we had to do is we had to come up with innovative ways of when the order is placed you can see stock availability and you could also have a guaranteed time of estimated delivery.

We have got these smart devices with little printers and you can actually accept that money and it could be electronically but you can actually provide the receipt and you can take care of that financial transaction then and there, which ensures we get money in quicker and your reseller gets the credit much quicker.

If there is a problem to log it, like we just had a breakage, who can delivery another 40 cases of savannah - it can be dealt with then and there because of the mobile devices, no phone calls [are] fully automated or fully digital.

IQ 1.2.1 Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

Me: Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

P6: I think if it is used effectively it will; if its abused, it will lead to other challenges.

IQ 1.2.2 Do you think it is economically viable to implement smart technology within in your organisation?

Me: Do you think it is economically viable to implement smart technology within in your organisation?

P6: Yes it is it makes a lot of sense because as I mentioned earlier with the fridge, the irrigation environment or the irrigation example, also smart technologies allow to have platforms in place that are less dependent on what language do you speak, what accent it is you have, and may not be easily understood. It will also allow it to provide services across time zones because at the moment we are in 4 time zones and the further one is from Taiwan, which is a 7 hour time difference, so if we want to offer a centralised service and it can be via AI, it takes the human factor out of it apart from supervisory and looking at the content.

IQ 1.2.3 What kinds of smart technology has you been exposed too, if any?

Me: What kinds of smart technology has you been exposed too, if any?

P6: A bot called Einstein, and for that you can ask Einstein the question, for example, obviously do we configured this. What is my balance that I have in terms of my purchases for this month because various resellers have various limits in terms of their credit balance, so instead of calling in or sending an email you just ask Einstein that question: hi, my name, or they will recognise the number is coming from, what is my balance; and then you can also ask where is my order, and then you obviously have to give the order number; so those are ones that we have trailed already, which is part of our goals which I have in February, which is going to be for our partners and resellers.

The sensors which we have in the fridges that we can actually see the depletion rate, maybe on a Friday, the values depleted at 3 times the rate and on a Thursday at the end of the month its actually 4 times, because it's the end of the month; but those sensors can actually tell you about what it is you need to do in terms of your stock levels and what to do in terms of your delivery and that's why 24/7 delivery is key.

A system called Opsy Orbit which is like a built-in navigation but we can also track how long the driver should take when they veering off if they are taking too long etc. and if they go out of certain tolerances, there are penalties. You don't want them to get there too soon because they are driving too fast and they may take a road which is not recommended and leads to highjacks, and you don't want them to take too long because you might lose that customer over a period of time if you are always 25, 30 minutes late, so there is a tolerance of maybe 5 or 10 minutes before and 15 minutes after the time, but we do have a tracking mechanism and we don't have our own drivers - it is all outsourced.

IQ 2.1.1 Do you think smart technologies will play an important role in the future of customer service?

Me: Do you think smart technologies will play an important role in the future of customer service?

P6: Yeah, I think so. I think smart technologies when you watch a movie or something or an ad on TV, there may be a code which is displayed and if you go onto that website you obviously demonstrate that you are over 18, you can actually participate in the marketing campaign or the campaign could be beneficial for whatever reason, and I think those are aspects that we don't have at the moment and more and more customers would like to participate in these types of things in the comfort of wherever they are, the whole convince of being able to do this at anytime and anywhere.

IQ 2.1.2 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

P6: I think it will but it is only over a period of time, not immediate and then also, what one has to guard against is where those activities were typically being covered by a human being, you need to ensure that there is a process change. You can't have the old way of working and this new way which will take some investment, the two happening side by side because then you won't lower your operational costs; you have got to keep a very brave decision but to do that you have got to manage that change very effectively with your existing staff that will be impacted.

IQ 2.1.3 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

P6: It will if it's in, I think the example which I am going to give you that we have chatted about as well at [company name removed], I think about when Uber came along, we know the story is well documented but then there was Uber Eats; now you know your food can also be service delivery, you have Uber Eats you have Uber because of their brand and reliability now gives them another channel and another opportunity for revenue.

Sometimes innovation doesn't mean you have to start from scratch, it can latch onto some other innovation and be innovated on top of that, so what stops us from having an Uber eats equivalent for a bottle of wine from Nederburg.

That level of innovation if you have smart technology because it is going to speak to integration How would the Uber guys know who is placing the order and are they over 18? Do they drink alcohol, yes or no? Aare they Muslim? Or you know, so I think those aspects can actually give you opportunities and not only for the alcohol but for anything else it could be for soft drinks.

Me: Thanks for that response.

IQ 2.2.1 Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

Me: Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

P6: By using AI and virtual reality you can participate in a wine tasting, for example, sit here at home it says also most like old winter reality you are in with whoever is in Switzerland tasting the red wine and you are having the same red wine here and you feel as if you are part of that; so it's not completely where you don't have to be somewhere else by using virtual reality or augmented reality, you can have the same experience using the smart technologies.

IQ 2.2.2 Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

Me: Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

P6: There is more integration hence there is more value add that the person selling the product can offer customers, as I said earlier, if you can tell me about my patterns of spending or consumption, my discussion will be or my interaction will be at a different level where as the person is not being aware.

But if they know exactly and its easy, the information is there, I service my car Audi every 15 000 kilometres and if they see every 6 months I do 15 000 kilometres but for that last 6 months I only did

3 000, they should actually say we will give you a reduction and they should actually say after the fact we are passing on a reduction to you; but currently, they are not leveraging that so I think those bits of information will actually improve the interaction which you have with your customers. It's scary, because let's say we had this, let's say we have the system that they have elsewhere like in the UK or Europe and you speed like I do and you get speeding fines, you can also then integrate that with insurance, and guess what, the premiums on your policy will go up.

IQ 2.2.3 Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

Me: Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

P6: Yes, when you abuse the information. I remember when I worked at MTN, it was [a] raw network in 2000, I could see who you would call normally at 11 o'clock at night and 3 o'clock in the morning and how long you speak for; do a geographical mapping of where most of your calls are going.

Before legislation you were not allowed to look at other people unless you are authorised to do so. I could easily type in your details, if I didn't like you then I could see who you are calling and at what time, especially if there is a suspicion of an affair, and I think that's where information could be abused and at one stage comes out you just don't know who you can trust anymore.

Ensuring that people don't fiddle on the back of your applications to get intelligence for wrongful measures.

APPENDIX D7: INTERVIEW TRANSCRIPTION P7

IQ 1.1 .1 What do you think is more important with regard to influencing the efficacious deployment of smart technologies within service-oriented organisations – economic factors or technological factors?

Me: What do you think is more important with regard to influencing the efficacious deployment of smart technologies within service-oriented organisations – economic factors or technological factors?

P7: I wouldn't say it is either or I would say you need both, because like you have just given a very good example, if you have all the technology but you do not have the money to actually implement it, it's a waste, it's a waste, if you have all the finances in the world but then you still can't solve some issues because technology doesn't allow it look at cancer, people have been putting so much money into cancer - it's all types of technology and all kinds of things but up to now we still don't have a 100% cure for cancer, so that's theology that having the money or anything doesn't truly mean that we can solve those issues.

So, when it comes to, of course the service-orientated organisations, I still think you will need to have a balance.

IQ 1.1.2 Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

Me: Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

P7: It's more than just political factors, I think everything comes together, so I like to think about it in terms of political, economic, social, technological, environmental, and of course legal stuff - everything comes into play.

Where you just go and type in and the machine gives you the fuel, or you go to like a train station and you are able to just swipe your card and you go through and there's no need for humans to help you in South Africa because of both political and social factors, we cannot have that.

IQ 1.1.3 Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

Me: Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

P7: Yes, they definitely do. They have a lot of potential and I think that we have seen that happening in some countries, especially in Europe. Europe and China, for example, these guys like in France they have autonomous trains.

But if it's more of technological then you know that yeah, I only have [one] problem to work with, and this is it, but that's not to say that you need to put humans out of jobs; it's a case of how do we then adapt what we are doing to give humans more, to give them jobs that require them to work more with their brains and are still more fun for them.

Does it add value or is it something we could automate and get this person to free up their time to do something else that adds value? It's about we can definitely use technology to help us to address some of these inefficiencies and at the same time train our human labour to actually do more advanced jobs.

IQ 1.2.1 Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

Me: Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

P7: Ja, definitely, it's very possible because it comes down to how you deploy these services, and how you tend to use it, if you get a spoon and treat it as a hammer, you're not going to get economic

benefit out of it; at the end of the day it is going to be throwing money at things, throwing technology at things that don't work.

It's a case of how do we apply these technologies to make sure that we are getting that desirable economical outcomes that we want as company, so one thing they can look at is machine learning, for example, and artificial intelligence, how are we using this to understand our communities, our people, and at the end of the day, are we able to deliver more value to them through this technologies or through this systems?

IQ 1.2.2 Do you think it is economically viable to implement smart technology within in your organisation?

Me: Do you think it is economically viable to implement smart technology within in your organisation?

P7: Ja, well, within my organisations they are already working on a few that we are implementing. This is more to improve inefficiencies, so things that are taking us maybe 3 hours to do, how can we make it simple so that we can do that within an hour, within 30 minutes that technology introduced in that time initially would've cost me way more but over the next five to ten years I wouldn't have seen that economic value coming because I can see that you know what my investment is better off over time and it's worthwhile.

IQ 1.2.3 What kinds of smart technology has you been exposed too, if any?

Me: What kinds of smart technology has you been exposed too, if any?

P7: Smart technologies, we have worked with Beacons, we have worked with NFC and what I have also worked with, scanners, so this is also IoT-related kind of technologies and on the software side machine learning and artificial intelligence.

IQ 2.1.1 Do you think smart technologies will play an important role in the future of customer service?

Me: Do you think smart technologies will play an important role in the future of customer service?

P7: Definitely smart technologies in our current generation, which is the way to go. 1. It's helping even the older generation, older, younger, like all generations, so be it millenniums, be it generation X, Generation Z, whichever generation, your "in" technology has pretty much transformation. Today we have like kids more at the age of four, five years, they are already using smart phones (that's smart devices); they already know how to contact emergency services through apps, at the end of the day technology has a place to play in going forward in life. the Future is just going to be more technologically like advancements it's just a case of what's the next technological advancement coming up and at what point, how do we adapt to I,t and how do we ensure it works for us as a business.

IQ 2.1.2 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

P7: Yea very much so. Companies should invest in wider competition; this is some of the smart technologies, so like short term that would be a high initial investment but long term you're going to find that your operational cost went down.

IQ 2.1.3 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

P7: Definitely it will, so just thinking about, it let's look at the police as SAPS, right.

so if I looked at the police for example and there was this one app that I could just quickly dial, it gives them access to my location, where I am, everything, and in case I need help they are immediately there as supposed to me now having to go dial their phone number, wait through that, ah, wait through that, ah, what's it called.. telephone centre that they are connecting me to a police cop who I now need to talk and communicate with - just think of someone who's for example in a house who is being robbed.

We need to encourage smart technologies in all forms of service delivery whichever place they can help; even think of food delivery services ordering on line; as consumers we look at things and be like oh why this is so efficient and everything, but we do not understand what is going on in the background to make that system really work.

Then of course 5G technology is coming up, so we need to look into how to make the most of this technologies that are coming up. 5G, I feel like it's possibly running 5G in South Africa, I think right now Rain is the main company pushing the 5G technology rain Telkom but like this is the kind of guys that is actually well positioned because when they finally roll out fully and they are running 5G we shall have a lot of capabilities from a technological aspect - your home would now be able to communicate straight with your car, your car can connect to the street light, all these kind of things, so you'll have that interconnectivity services, interconnectivity that enables all these things that we are talking about, connect straight to your bank account and all these kind of things.

And let's stress it - 5G is not just a upgrade to the current communication, 5G is everything that everyone is fighting for because we want to be seamlessly connect to everything so we all want to be at the lead of this, it's a big war there.

Me: Amazing! thanks for this answer.

IQ 2.2.1 Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

Me: Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

P7: If I am online then I am able to maybe visualise myself putting on that kind of dress, some kind of avatar of myself that I am dressing up, or I am able to maybe stand in front of the mirror and just tap a few clothes, like yes, this fits, this fits, and when I am looking in the mirror, this pretty much shows me this is what you look like while you are dressed with these kinds of clothes that you selected. I am like, oh cool; order for me this, order for me that, that kind of thing then that is bridging the gap.

IQ 2.2.2 Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

Me: Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

P7: Customer interactions so that's basically like the mirror dressing thing as an interaction so that means augmented reality, virtual reality.

IQ 2.2.3 Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

Me: Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

P7: Yes they can, so right now we just look at how we are using some of these technologies, but do you ever ask yourself what happens to these old mobile phones, what happens to all the electronics chips that have been used in these phones, where do they end up? I mean, when they are creating these things, they are planning a lot of things, whether they [are] digging up a lot of queries, there are a lot of things they are changing with the environment, so where do these things come from is a very key question just as much as how are they helping us, so at the end of the day, we need to get into what we call a circular economy so you are able to produce it to go through its life cycle, but at

the end of the day, that's the end of its life when it's pretty much done with, we should still be able to recycle it either into a new product or something of sorts so as much as technology is helping us, at the end of the day. they are also causing a lot of negative issues.

The environment [is] negative but there is also to us as people because there are lots of waves, microwaves, things that we are not able to see, things that are happening around us which we cannot visualise, especially diseases, cars and oils which cause part of the environment - it's the animals that are environment as well, so these things are all affecting us at different rates and different ways, but at the end of the day, it's a case of how do we manage them and because life is progressive you can't resist change.

APPENDIX D8: INTERVIEW TRANSCRIPTION P8

IQ 1.1.1 What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

Me: What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

P8: Around economic and technological, so the two go hand in hand almost, and the reason why I say that, yes, from an economic point of view, technology is going to cost a bit more initially, your initial investment is going to be more, but in the long run, it is going to reduce errors. It is going to improve your service to the client, it's going to enhance their service delivery to their clients. You need buy in from your investors because it is one thing and we have seen a lot of projects fail where you make a huge economic or financial substantial investment but it is technologically sound. If you don't get buy in from the users it is going to fail, so the two go hand in hand in my sense. They are equally important because the one impacts on the other one.

IQ 1.1.2 Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

Me: Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

P8: 100% and going back to your initial comment where you said let's use the Huawei as an example, they are giving the so called apples and Samsung's a run for their money with the technologies and the whole US ban on Huawei products China and all those things that is definitely political.

It goes just beyond that, it impacts jobs, it impacts trade, it impacts relationships.

There are a lot of companies that don't do business in countries where there is political instability it impacts, you have to take your staff's wellbeing into account - is your technology going to be safe in that country?

IQ 1.1.3 Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

Me: Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

P8: Absolutely, I mean every single day in everything that we do we [are] looking at the end of the day being a service-orientated organisation; your goal is to address service delivery for your potential client so they can offer a better service to their client.

Me: Alright

P8: At the end of the day everything that you do as a service-orientated organisation, your client is your end result, focusing on how it impacts or improves them.

IQ 1.2.1 Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

Me: Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

P8: I absolutely believe that the only thing constant in this world is change and if you think back to and I am going to use some of the projects I have worked on in the past we have used technologies for the last 10, 15, 20 years because it works we haven't changed it.

P8: We do want to improve the service; you want to give a better quality product, that's basically what you do, so from a service provider's point of view, it's viable because we are getting paid a lot of money.

P8: So our clients in the long run are getting a better product which they use to service their client so it's a win for everybody.

Me: Great thanks.

IQ 1.2.2 Do you think it is economically viable to implement smart technology within in your organisation?

Me: Do you think it is economically viable to implement smart technology within in your organisation?

P8: We are actually relooking at this entire model and methodology in Australia at the moment and we are forming a new methodology where we are incorporating smart technologies and once this works, we are going to roll it out to the rest of the globe, so yes.

IQ 1.2.3 What kinds of smart technology has you been exposed too, if any?

Me: What kinds of smart technology has you been exposed too, if any?

P8: From a home base then personally your Google Chromecast, your smart homes, and those type of things and then from a work point of view coming back to your data bases and those types of things, so obviously we work with a lot of data in our organisation; so we are looking at things like storing AWS, cloud technologies, we are looking at different types of ETL tools talent and those type of things, and it all ties into the smart technology kind of realm because at the end of the day it needs to have an impact economically, it needs to be effective from a positive point of view.

IQ 2.1.1 Do you think smart technologies will play an important role in the future of customer service?

Me: Do you think smart technologies will play an important role in the future of customer service?

P8: Absolutely! We are moving in a world where the only thing constant is change.

P8: Let's use banking; a simple thing like banking, for example, you talk about apps and those things, how many people actually still go and stand in the queue at the bank and I am using this as an example because if I go into our line of work, it's a bit so, you know your banking apps, booking a flight, let's use Uber as an example and at the end it is only going to get easier.

P8: Aiming at giving a better service at the touch of a finger.

Me: Amasing, thanks.

IQ 2.1.2 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

P8: Your initial investment will be quite hectic or it will be substantial but in the long run it reduces your operational costs in a sense that you might need less people to do the job.

P8: Human error gets in the way of things, it reduces your errors overall or your turnaround time on certain task.

Me: Insightful response.

IQ 2.1.3 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

P8: Yes, within organisations through committed service innovation you see again this speaks to knowing your customer and knowing what your client wants.

Getting it right to do something because the client is going to impact not because you want to spend the money, you need to understand the requirements, get it right, and then I am in agreement with that statement.

IQ 2.2.1 Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

Me: Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

P8: When last did you buy a magazine or a newspaper? So that answers that question/ Kindles, tablets, laptops, phones, that's the way of the future. The gap is closing fast.

IQ 2.2.2 Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

Me: Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

P8: There are times when we need to speak to a human being [through] physical interaction, so one of the banks, one of the big four banks in south Africa, they [are] looking at completely doing away with as we know it the brick buildings. They want to go fully digital and online, now to me it might help in a certain instance but what if you have an issue like let's say you phone in press one for this, press 2 for that, press 3 for that, what if your problem is not on that menu?

P8: It will through service delivery but we cannot lose the fact that customer interaction of a physical nature is still necessary. And you know what that is about, it's about having a call centre of 50 people versus having a call centre of 5 people, so they are reducing their costs but they are also causing extra frustration to their client and what happens in the long run if they don't get that model right? You are going to go find a medical aid and a bank where you can speak to some body.

IQ 2.2.3 Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

Me: Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

P8: Yes, because we are never going to remove the human element completely in my life time. I think I am a bit older than you, and you know somewhere some people think that we are going to roll out this package, we are going to roll out this solution, we don't need human interaction that is wrong; we do need human interaction because there are certain things, so then obviously, what we do then is studies to do the research - these are the top 50 errors we can get from a bank income medical aid etc. you do that, one guy phones and that option is not there, then you go into a queue and you are caller number 55, that's going to drive you insane.

APPENDIX D9: INTERVIEW TRANSCRIPTION P9

IQ 1.1.1 What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

Me: What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

P9: It would be a combination of both but because the technology is there, I mean infrastructure and stuff - they ought to be there. We are in a connected world today but economic factor[s] play a role whereby in a sense we can come to costs as well.

P9: It is a challenge between both, whereby you need to find that link between the two.

IQ 1.1.2 Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

Me: Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

P9: Absolutely! It comes up a lot in our space as well where I would say we are a service-orientated organisation but political influence factors in a sense whereby South Africa is actually, if government is partnering with the right countries, like for example. Chinese investment is important to this country because with that will come certain technologies, There is also a price tag as well, so political governmental relationships there are around the world, so south Africa become[s] a global player or is part of the bigger global environment community that will then actually influence us greatly.

P9: We want to give the child in south Africa the same playing field as a child in China, but how do we do that, that's a challenge; but yes, politically does definitely play a big role.

IQ 1.1.3 Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

Me: Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

P9: Yes, I definitely do agree with that. I think response time is a big factor there, so having smart technologies supporting us, like GPS locations, gives organisations that speediness in terms of response and speed; whatever the situation the client member and the individual finds himself in, its just a matter of response and access again.

Using smart technology can improve that in a great way in terms of response times, speediness and also just the approach to change in delivering on essential services as well makes it much quicker in terms of using technology.

The more you can do if you have real-time analysis the better you know what is actually going on in your business.

IQ 1.2.1 Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

Me: Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

P9: Yes, it absolutely would I mean and I think that has been proven as well, I think looking at when we speak about children and the exposure to smart technologies than in other countries of the world, the advancement of them and you can see that they can contribute to the economy of the country and the world as well.

Me: Yes, ok.

P9: The children out there are being prepared for jobs that probably don't exist as yet but in 10 years' time they probably would be there and by having that geared up and thinking along the lines of smart technologies that are available, would then make them a fore rather in terms of getting positively into the economy and the economy of the world as well.

IQ 1.2.2 Do you think it is economically viable to implement smart technology within in your organisation?

Me: Do you think it is economically viable to implement smart technology within in your organisation?

P9: Definitely, so I think that fed group does have a lot of good and innovation and definitely in line with smart technologies to categorise it, as that in competition that compared to maybe some of the bigger insurance players out there just because purely we are a small to medium organisation and we can implement certain things quicker as there is less red tape involved in it, but also we have a very innovative management team, very innovative IT developers, we are mindful and looking out for these kinds of things. We definitely can implement a lot more in the day business and I think we will be doing so in the near future as well.

IQ 1.2.3 What kinds of smart technology has you been exposed too, if any?

Me: What kinds of smart technology has you been exposed too, if any?

P9: Kind of thing, I think the GPS stuff as well. I use a lot of apps. I just got another app that gives you a, it's like a family group finder; you can tell if a person is part of your circle.

P9: White boards, Smart TV.

P9: Access and connectivity to the servers remotely, you can get much more out of them for the 3 hours they were sitting in traffic.

P9: Everyone is using WhatsApp and that kind of thing. Why does he need to go to a POSTNET branch to fax a letter to us or fax a copy of his ID to us when you can take a picture send it over WhatsApp and we can deal with him having a chat to him over WhatsApp and he can explain what he needs to claim for and that kind of stuff and you can actually submit a claim via WhatsApp.

IQ 2.1.1 Do you think smart technologies will play an important role in the future of customer service?

Me: Do you think smart technologies will play an important role in the future of customer service?

P9: Absolutely I think with artificial intelligence, machine learning, those concepts are started that we often in our organisation and in the world out their people I wouldn't say robots would replace people entirely because you have to tell a robot what to do, but the thing is, you are not always going to be able to reach the other end of the line at maybe 10:00 at night, for example, whereas [an] automated solution in place and that kind of stuff you can access it whenever you want to. We live in the real-time world, people want access to information at the click of a button and technology gives you that, it makes it accessible to them and I think by having this artificial intelligence layer in the organisation it allows you to give a quicker response alert personalised and individualised and I think that will absolutely play a big role in the future of CS.

IQ 2.1.2 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

P9: Definitely will bring down the operational costs just by automation and the smart innovative ways of clients accessing or dealing with your company, so in terms of like I said, using the WhatsApp for business with a layer of artificial intelligence, all those factors, they would lower your operational costs because those elements can do a lot more and a lot quicker because it is repetitive stuff. It makes your error rate quite low but by having knowledge of that to react quicker you, won't have any effect on your operational costs as well just to paint a picture.

IQ 2.1.3 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

P9: Yes, I think that will impactful investment. I like that word because we have a product called impact farming which is about profit it's about putting people into our profits it has an environmental impact, you are creating jobs, you are doing a lot more with a lot less if that makes sense so I think that would definitely improve the overall service experiences because now we have huge potential which probably without using technology you are not going to have that in place.

IQ 2.2.1 Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

Me: Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

P9: Physical experience is still important because it is an emotional element as well so you can't just digitise things in that kind of style; you client can't actually get a machine to do that type of stuff.

IQ 2.2.2 Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

Me: Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

P9: I think it comes down to the costs element as well you are looking at in terms of how you can give back to your clients, for example, in the investment environment if your cost is coming down, it does have an impact on rates now because you have an admin fee or you have a consultant fee and that type of stuff as well; so in terms of what our clients claim to access these benefits and services and that kind of stuff and by using the technologies in place to bring down his cost you can give the client a lot more for his premium or he can save money in terms of what he is getting.

IQ 2.2.3 Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

Me: Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

P9: Yes, a physical experience where you [are] connecting through clients in a negative way; people want to be special people, want to feel important and that kind of thing. They don't just want to be treated as another client so by driving things too much into automation or robotics.

APPENDIX D10: INTERVIEW TRANSCRIPTION P10

IQ 1.1.1 What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

Me: What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

P10: Technology factors if I have to say, which can improve your deployment, these technologies are early adoption. How early are you able to earn these technologies if the economic situation is good? Then the organisations will be able to operate their business better.

P10: Economic situation is very critical for the organisations rather than smart technology.

IQ 1.1.2 Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

Me: Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

P10: Political factors, I don't think, so because organisations operate on a certain boundary in doing business and if you are able to do business the country the political factors unless it is completely where you are having civil war if you are talking about extreme political factors unless it is an extreme political factor, I don't think it will impact.

P10: Political situation can actually stop you from using it unless you have stopped funding for it.

IQ 1.1.3 Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

Me: Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

P10: No doubt about that! Through digital transformations, through organisations that adopt sooner grow faster.

IQ 1.2.1 Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

Me: Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

P10: Definitely because if it is not economically viable, then why would we be coming up with these technologies, because it is for you to be more efficient, for you to be faster than your competitors and you want to give services of the best of the quality.

IQ 1.2.2 Do you think it is economically viable to implement smart technology within in your organisation?

Me: Do you think it is economically viable to implement smart technology within in your organisation?

P10: Definitely, we are already doing this.

IQ 1.2.3 What kinds of smart technology has you been exposed too, if any?

Me: What kinds of smart technology has you been exposed too, if any?

P10: From an organisation perspective I think artificial intelligence, machine learning I think these are the two things and then obviously we have used.

IQ 2.1.1 Do you think smart technologies will play an important role in the future of customer service?

Me: Do you think smart technologies will play an important role in the future of customer service?

P10: Yes

IQ 2.1.2 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

P10: Yes

IQ 2.1.3 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

P10: Yes if you are able to kind of get better services done through smart technology then the commitment to service innovation will increase; if you are not able to get the benefit of it then you would say why should I do this?

IQ 2.2.1 Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

Me: Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

P10: I think it is closer to the customer, whatever innovation coming up is closer to the customer. You don't have to go looking for information and services; it is right with you whether you are an end user customer or whether you are an organisation picking a service from a different organisation, services are closer to you and adapt more to the way you run your business. Pretty much most of the businesses. most of it is customer-centric driven.

IQ 2.2.2 Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

Me: Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

P10: There is a customer interaction and with customer interaction it is very specific to certain kinds of services and yes, it definitely will, so it is very specific to that, and yes its open to interpretation because it is not generic across all businesses; you don't have certain business where it's too much about customer interaction; its more something to be done like I am expecting something to actually happen.

IQ 2.2.3 Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

Me: Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

P10: I don't think so because unless it [has] been implemented, if we are looking at the scenario, things have implemented as per your business case so it has to go right.

P10: It's more of an operational issue rather than the technology that's causing the problem.

APPENDIX D11: INTERVIEW TRANSCRIPTION P11

IQ 1.1.1 What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

Me: What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

P11: I think they go hand in hand, but I think as time goes on, the technological factors in many ways take precedence over the economic factors, because as you move along the disruption curve, eventually the technology itself becomes demonetised and democratised.

Me: Ok.

P11: At the economic factors and saying that we can't possibly behave because of the economic factors is short term thinking because the technology is going at a pace regardless of what is happening in the economy.

IQ 1.1.2 Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

Me: Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

P11: Yes, definably if you think of what some of these new technologies can do you could replace that entire call centre with a piece of code, and I mean there are a few ethical questions on that as well, not just political. You can imagine within an organisation if you are the head call centre and now your department will be dropped and replaced with a SaaS offering, like you get some push back from that.

P11: There are also policy factors at play, but that also depends on like the organisation and the maturity of the organisation where like the bigger organisations seem to be quite politically driven, and when the smaller ones like if you think of Tym bank, I don't think that there are any political drivers within that organisations, like they just consume technology and they know that is what has to grow their business.

IQ 1.1.3 Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

Me: Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

P11: Absolutely! To take a simple example, most service organisations rely on time keeping of their staff and billable hours, for example, so utilising their smart phones without having to have any direct input, so they walk into your office with GPS tags they have their clients sign in to.

P11: This kind of thing could impact on how we live and how we accurately reflect on what it takes in time perspective, just enabling people to work better and delivery, better service regardless of where they are based.

IQ 1.2.1 Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

Me: Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

P11: Absolutely! I think the way we do business may well change in the future, not in the immediate short term, and we don't necessarily know what that business module is going to look like, but we do know that with the rate of technology changing at the moment, that the way that we have done business in the last 5 years is different to the way business was done 20 years ago.

P11: There is absolutely more scope to add, more value, and to improve the bottom line through smart technology, but the way we do it if we sit down and chat in 5 or 10 year time, maybe very different than to how we are looking at it now.

IQ 1.2.2 Do you think it is economically viable to implement smart technology within in your organisation?

Me: Do you think it is economically viable to implement smart technology within in your organisation?

P11: I think it absolutely is and I think that anybody who does not look at implementing smart technologies on an ever increasing basis going forward is not going to be around in 5 years' time.

P11: We think of digital transformation at the moment. Digital transformation is a big by word in the business; in 5 years everyone is going to be digitally transformed, it's not going to be a thing anymore because we would have done it.

IQ 1.2.3 What kinds of smart technology has you been exposed too, if any?

Me: What kinds of smart technology has you been exposed too, if any?

P11: Phones, GPS for phones by built-in services; we have been involved in IoT projects looking at traffic light monitoring where smart waste bins, we have looked at projects involving regulation of street lights, we have done work looking at smart homes.

Big data, AI advanced analytics and predictive analytics.

IQ 2.1.1 Do you think smart technologies will play an important role in the future of customer service?

Me: Do you think smart technologies will play an important role in the future of customer service?

P11: People are starting to adopt smart technology; they are starting to utilise smart technologies but I think going forward more and more, whether they were talking about robotics process automation or whether they were talking about the data, people are willing to get off their phone; they are going to use all of those technologies to improve service to customers and to making new things that people want to do them even better.

IQ 2.1.2 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

P11: They are moving away from a lot of fixed capital assets and moving a lot, I think that organisations in general are trying to move to operational costs, and adopting smart technologies allows us almost move to a pay-as-you-use mode. I think we are moving away from a model of big upfront investments. This in turn frees up expenditure to look at innovation products but also in those cases you are also only paying for what you need.

IQ 2.1.3 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

P11: Yes, it can help enable impactful investments but here is one where the technology is not going to do it for you - technology is an enabler so what's really going to drive impactful investments? Improved services, experiences, committed service innovation is not the technology, it's the people.

You can have all the smart technology in the world, but if you don't have a commitment from the business and the people running the business, that they want to use their technology for betterment of signing, whatever way, I mean if you take Samsung for example, I think their massive transformed purpose is for "we build what can't be built so you do what can't be done".

Organisations that don't have that massive transformative purpose going forward, I think that they are not going to be around for very long; already a life span of a 45-year old company has moved to 70 year back in the 30s, so 1930s is about 9 years now, so you have got to look beyond just your bottom line and for that you have to have the people driving it, not just the technology.

IQ 2.2.1 Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

Me: Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

P11: Absolutely from a consumer perspective look at Airbnb and Uber, it is completely disruptive industries but it's completely up to the person's experience; they no longer have to phone up a hotel to make a booking, you just go on your phone tap and then there you go, it's done from a service-oriented [perspective]. Likewise, we are reaching a point where if I am going to be providing software development services, the chances are you are never ever going to see my people; you are going to see them at the other end of the computer interface or on a Skype call.

P11: It absolutely lets you move away from the physical exchange aspect and move forward and that's going to happen more and more as we move forward, you just think of it as tin and cloud; the physical experience used to be going into the nice cold server room, change things around, move plugs; now it's literally just tap cloud, scale up done.

Me: Very interesting.

P11: From a service perspective you are not necessarily going to be investing in the face-to-face person; you might do but probably on a low base, but you are going to invest more in the service that the applications can provide on your cell phone to improve the experiences.

IQ 2.2.2 Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

Me: Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

P11: It lets us respond faster to feedback, whether it is positive or negative feedback, so it absolutely you have to use the technology and the data analytics and the insights because otherwise your product is too easily overlooked, or if you are not responding to feedback then people are going to go well then don't bother to buy this anymore.

IQ 2.2.3 Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

Me: Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

P11: There is a customer interaction, and with customer interaction it is very specific to certain kinds of services, and yes it definitely will, so it is very specific to that, and yes.

P11: It's open to interpretation because it is not generic across all businesses; you don't have certain business where it's too much about customer interaction, it's more something to be done like I am expecting something to actually happen.

APPENDIX D12: INTERVIEW TRANSCRIPTION P12

IQ 1.1.1 What do you think is more important with regard to influencing the efficacious deployment of smart technologies within service-oriented organisations – economic factors or technological factors?

Me: What do you think is more important with regard to influencing the efficacious deployment of smart technologies within service-oriented organisations – economic factors or technological factors?

P12: Economic factors; the tech is there, the tech has been there for a while, it is now building those business cases.

IQ 1.1.2 Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

Me: Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

P12: Yes, definably if you think of what some of these new technologies can do you could replace that entire call centre with a piece of code, and I mean there are a few ethical questions on that as well, not just political. You can imagine within an organisation if you are the head call centre and now your department will be dropped and replaced with a SaaS offering, like you get some push back from that.

P12: There are also policy factors at play, but that also depends on like the organisation and the maturity of the organisation where like the bigger organisations seem to be quite politically driven, and when the smaller ones like if you think of Tym bank, I don't think that there are any political drivers within that organisations, like they just consume technology and they know that is what has to grow their business.

IQ 1.1.3 Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

Me: Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

P12: Yes and its already doing it at the Summit. There was talk on how machine learning and real-time event streaming is used in real-time [to] address customers' needs.

IQ 1.2.1 Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

Me: Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

P12: Absolutely if it's actually deployed, that means it has already proved itself. There is this fear that these technologies will make people lose jobs, but I think in reality what is going to happen is people will get freed up to do better things.

IQ 1.2.2 Do you think it is economically viable to implement smart technology within in your organisation?

Me: Do you think it is economically viable to implement smart technology within in your organisation?

P12: Providing a proper service within IT, we probably have had processors like we are a tiny company. Yes, we have processes in place that we could benefit from using better technology. I think in our organisations I don't see it, I just think we are too small, we implement it at clients which is [a] service-orientated business, which is more traditional there; we see the benefits.

IQ 1.2.3 What kinds of smart technology has you been exposed too, if any?

Me: What kinds of smart technology has you been exposed too, if any?

P12: IoT projects, also where the health of animals was being monitored, and implementation of machine learning and AI quite extensively.

IQ 2.1.1 Do you think smart technologies will play an important role in the future of customer service?

Me: Do you think smart technologies will play an important role in the future of customer service?

P12: Absolutely! I think we are going to get to a point where human interactions are going to be limited. You will phone into call centres, you will mail them or SMS them through any channel and they will respond to you like within seconds, but it won't be humans doing it; it will all be powered by other smart technologies.

I think it is going to drive service delivery and it's exciting if you wanted to start an online store and you had to have a customer's support or support centre, you can set it up.

IQ 2.1.2 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

P12: A bit of an initial investment which needs to be made in it, technology, but I think over time the return of the investment is definitely there but in the short term, no longer term, absolutely.

IQ 2.1.3 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

P12: I would definitely encourage any company to look at this no matter what you do, because this wave is coming and unlike many people think that using these technologies is a differentiator, it's not smart technology; is just not a differentiator anymore; it's been democratised, it is an equaliser. If you are not investing in it you are falling behind; so for me it is as simple as that. If I hear any client saying this is going, it set[s] us apart from the market, absolutely! Not everyone has access to this, if you are the last one to use it, then it has set you apart but not in a good way.

P12: If you adopt that first new thing within your company and the rest of the organisation sees the benefit.

IQ 2.2.1 Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

Me: Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

P12: Absolutely! It is amazing if you think of Googling online, like you're searching for hair loss products and going into a shop and suddenly you get an SMS or a push notification that this thing is on special, like that is quiet cool, I think, definitely.

P12: Some spectacle company, you can virtually try on glasses without going into a store so I think it is a pretty cool experience.

IQ 2.2.2 Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

Me: Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

P12: Definitely! I am hammering on personalisation but it is where, even if it's not digital, content being pushed to you that feels personal. What it could be is if you go and sit with your financial

planner and the financial planner on its own, that person can only see so much, but if he has got this system behind him that can pull info from your social media to get a better holistic image of you.

IQ 2.2.3 Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

Me: Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

P12: Though that thing would not sentence but judge would see that, and I mean we are only human, so if that thing says that the chances are good, they are going to go out here then that would definitely be influenced that judge's decision.

P12: The power of these things technology could be wrong is it isn't trained properly; I don't think the scientists who trained it have a bias, but they didn't realise there is a bias in the data that they used.

APPENDIX D13: INTERVIEW TRANSCRIPTION P13

IQ 1.1 .1 What do you think is more important with regard to influencing the efficacious deployment of smart technologies within service-oriented organisations – economic factors or technological factors?

Me: What do you think is more important with regard to influencing the efficacious deployment of smart technologies within service-oriented organisations – economic factors or technological factors?

P13: Economic without doubt, so you know if you take it all the way back to what is the point of rolling out these technological things, it's easy to say it's to offer better service realistically; it's about doing so cost efficiently.

IQ 1.1.2 Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

Me: Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

P13: Yes, so I am not sure whether you were meaning politically as in within an organisation or you know national politics, but I think both, so within an organisation I think that speaks a little bit to the CEO and people trying to play that whole battle; for the short term things in terms of more governmental, you look at Estonia - there is no better example than government putting in place policy that allows technology to flourish.

P13: Another example would be Rwanda with their drone programs. Rwanda opened up their regulation, invited people to come and play despite having little ounce to offer. Just looser regulation is allowed Rwanda to become a leader in that space.

P13: From both points of view, so the US recently, but how Huawei was able to get so big; similarly with Ten Cent; Alibaba was the protectionist policies of China, so there again they allowed those industries to flourish because of their political influence.

IQ 1.1.3 Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

Me: Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

P13: Absolutely! I think when it's done right you can offer services at a level both quality and cost than more traditional methods can't even get close to.

In terms of service delivery, absolutely, and I think there is a lot more to come so if you look at the IoT space, I think a lot of noise is being made of it. I think fairly little is actually being achieved but I still think that the promise is there. I think the biggest hurdle it's going to have is the privacy fears.

IQ 1.2.1 Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

Me: Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

P13: If it's done properly, yes.

IQ 1.2.2 Do you think it is economically viable to implement smart technology within in your organisation?

Me: Do you think it is economically viable to implement smart technology within in your organisation?

P13: Yes definitely, so maybe just to add to some of the stuff that you wouldn't necessary be able to see from the outside: So firstly, the app and the impact farming product in total that allows a lot of intermediaries to be bypassed, so we said the guy who is creating value, the farmer, wanted to be in touch with the guy who has the assets to invest and help him grow; so as opposed to that traditionally

running through a dozen layers whether it be investing into a company stock exchange and stock brokers then into unit trusts and auditors, you know all of these layers just diluting the value of a person.

P13: By connecting them directly, so obviously that there is a cost to it but it is viable because of the other costs that you can stripe away, then on the other side, there is a lot of IoT behind the scenes running all of that stuff; so all of our solar plants you can track, it's on a TV around the corner from me we, can track certain bee hives so you can see how the temperature and the health of those hives, the soil condition, and the blue berry, the whole lot there.

P13: That allows you to do a lot of your risk mitigation as opposed to have a retrospective thing so you can see the problem coming as opposed to something has gone wrong and it's all that's found 2 years later.

P13: We run that the whole way through, so yes, I can say it is economically viable because it's happening.

Me: Awesome, thanks for that.

IQ 1.2.3 What kinds of smart technology has you been exposed too, if any?

Me: What kinds of smart technology has you been exposed too, if any?

P13: IoT produces a lot of data so we are running machine learning and I say machine learning not AI because there is a difference; one versus the other, so those are the two things we play in quite a lot.

Crypto and all of that stuff we have specifically chosen not to play in it. I think it is going to become very commoditised.

IQ 2.1.1 Do you think smart technologies will play an important role in the future of customer service?

Me: Do you think smart technologies will play an important role in the future of customer service?

P13: Yes, I think without it the company won't survive; it's a necessity.

IQ 2.1.2 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

P13: Encouragement alone I don't think would drive sufficient action.

IQ 2.1.3 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

P13: Yes, it needs to be driven from a necessity and I think that is why we see start-ups being more successful at it.

IQ 2.2.1 Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

Me: Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

P13: Yes, it has got a long way to go but I think it is getting there. I think the phone was probably just the first massive step.

IQ 2.2.2 Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

Me: Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

P13: Yes customers' expectations are changing; you look at guys in their 20s, they don't want to phone, they don't want to phone people, they will order pizza from the one they can order online rather than having to phone and order a pizza, which I identify with, so I think it is sort of 2 things. I think it will enhance the quality but I think the expectation is changing almost as quickly. If you go back 20 years and people would get a statement in the mail a week whereas now by midday on the 1st they're complaining that they haven't received a statement.

P13: It is just the natural progression of things.

IQ 2.2.3 Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

Me: Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

P13: Job security becomes a concern in terms of particularly your frontline guys; we already talked about Standard bank shutting all the branches and what not, so I think that is one aspect, I think a big aspect, as you drive towards a tighter margin you are probable going to drive towards monopoly or oligopoly.

APPENDIX D14: INTERVIEW TRANSCRIPTION P14

IQ 1.1.1 What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

Me: What do you think is more important with regard to influencing the efficacious deployment of smart technology within service-oriented organisations – economic factors or technological factors?

P14: The one feeds the other, right, so when we started we first had to find ways to supplement because it all comes down to cost at the end of the day the economic one feeds into technological, so that is something which we need to sort out to be factored in.

IQ 1.1.2 Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

Me: Do you think political factors can influence the deployment of smart technology within service-oriented organisations?

P14: Politics and economics go hand in hand, definitely. To start deploying these smart technologies we do need the support of government to be more active and that is one of the underlying factors, so I would definitely say a yes.

IQ 1.1.3 Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

Me: Do you think smart technology has the potential to address and improve service delivery problems within service-oriented organisations?

P14: Yes, because it should be taking a lot of the repetitive error prone work out of your way; so if you don't need to manually calculate a payment space, for example, how much change is needed, like that improves service delivery; if you can tap a card instead of taking cash it improves delivery and speed.

IQ 1.2.1 Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

Me: Do you think the deployment of smart technology will have positive economic outcomes within service-oriented organisations?

P14: Yes, they would open up jobs and it would empower entrepreneurs to do more with what they have got.

IQ 1.2.2 Do you think it is economically viable to implement smart technology within in your organisation?

Me: Do you think it is economically viable to implement smart technology within in your organisation?

P14: Yes, it will definitely benefit our organisation so that's a big yes to it's the reason for our existence.

IQ 1.2.3 What kinds of smart technology has you been exposed too, if any?

Me: What kinds of smart technology has you been exposed too, if any?

P14: AI in additional to the traditional tech stuff, VR and interactive boards.

IQ 2.1.1 Do you think smart technologies will play an important role in the future of customer service?

Me: Do you think smart technologies will play an important role in the future of customer service?

P14: Yes and before you ask why, it ties back to the two above questions.

IQ 2.1.2 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help lower operational costs?

P14: Definitely would, especially if you get into like a repetitive mundane way of doing things and find smarter ways to doing it, yes, it would.

IQ 2.1.3 Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

Me: Do you think encouraging the adoption of smart technology within the service delivery industry to enable impactful investments will help drive improved service experiences within organisations through committed service innovation?

P14: Yes.

IQ 2.2.1 Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

Me: Do you think that the rise of smart innovation is bridging the gap between a customer's digital and physical experience?

P14: Yes, but very slowly. It's still a long haul to go in an African context; yes, and also economic and political factors.

IQ 2.2.2 Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

Me: Do you think smart technology will help improve the value of service delivery through the enhanced quality of customer interactions?

P14: Yes it will.

IQ 2.2.3 Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

Me: Do you think smart technology can contribute to, and influence service delivery environments in a negative way?

P14: Possibly if we over-automate and we take the human touch out of it; we need to be aware of and how to keep the human element still.

APPENDIX E: EXAMPLE OF ANALYSIS OF INTERVIEW DATA

