



UNIVERSITY OF KWAZULU-NATAL

**A study of customer value management technology adoption by mobile operators
in eSwatini**

By

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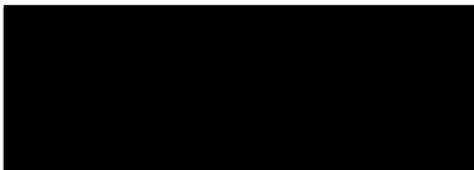
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List of Abbreviations

1G - First Generation

2G - Second Generation

3G - Third Generation

4G - Fourth Generation

AI - Artificial Intelligence

BI - Business Intelligence

BDT - Big Data Technology

CEO - Chief Executive Officer

CRM - Customer Relationship Management

CVM - Customer Value Management

ES - Expert Systems

GSM - Global System for Mobile Telecommunication

IT - Information Technology

ML - Machine Learning

TAM - Technology Acceptance Model

TOE - The technology, Organisation and Environmental framework

UTAUT - The Unified Theory of Acceptance and use of technology

UKZN - University of KwaZulu-Natal

ABSTRACT

Customer Value Management (CVM) technology has emerged as a significant revenue stream in the mobile telecommunications industry. CVM technology contributes substantially to revenue growth in the mobile sector. CVM technology plays a crucial role in revenue growth within the mobile industry. In developed countries, major mobile operators have made considerable efforts to adopt CVM technology. It appears that mobile operators in developed countries are adopting CVM technology as a means to gain a competitive advantage. The study aims to examine the factors that influence the adoption and use of CVM by mobile operators in Eswatini.

A quantitative survey methodology was implemented in the investigation. A total of 254 Eswatini MTN employees completed a closed-ended questionnaire. This study used the Technology, Organisational, and Environmental (TOE) Framework as a theoretical lens. The TOE framework is mainly utilised to study the adoption of technology at an organisational level.

The findings revealed that the three constructs — technological, organisational, and environmental —are the main variables that impact the decision to adopt customer value management technology within the TOE model. However, the most significant determinants were technology, followed by organisational and environmental factors, which were the least important.

The research contributes to the body of knowledge on the factors influencing mobile operators' adoption of customer value management technologies in Eswatini. The study's findings have the potential to inform mobile operators' strategies for implementing new technology. Additionally, mobile operators interested in investing in CVM technology should consider the factors highlighted in the study before adopting customer value management technologies.

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Chapter One: Introduction

1.1. Introduction of the study

The impact of information technology on business operations is significant, as noted by Jackson and Allen (2023). In particular, mobile operators have recognised the necessity of adopting modern technological advancements as a core component of their strategic frameworks. This shift is primarily driven by the overarching trend of digital transformation that is reshaping industries worldwide. As businesses strive to remain competitive in an increasingly digital landscape, the integration of innovative technology solutions has become essential. This not only facilitates improved operational efficiency but also enhances customer value management, which is critical for sustaining market relevance.

To achieve greater profitability, mobile operators have been compelled to incorporate sophisticated technological tools into their daily operations. This integration often involves the deployment of advanced technology, data analytics, artificial intelligence, and cloud computing, which collectively enable these companies to streamline processes and make informed decisions. By leveraging these technologies, mobile operators can optimise resource allocation, reduce operational costs, and ultimately drive revenue growth. The strategic adoption of such technologies is not merely a response to current market demands but also a proactive approach to future-proofing their businesses against the rapid pace of change in the digital era.

1.2. Background of the study

The incorporation of modern technologies has become a key necessity for mobile carriers that want to maintain their competitive advantage in the market (Chatterjee, Chaudhuri, and Dutta, 2018). In an era characterised by rapid technological advancements, a deep comprehension of these innovations is imperative for effectively navigating the intricate dynamics of the digital environment. Mobile operators face the urgent need to acquire relevant knowledge about modern technologies and implement this understanding promptly and efficiently. This dual requirement not only enhances their operational capabilities but also positions them to respond adeptly to the evolving demands of consumers and the marketplace (Chatterjee, Chaudhuri, and Dutta, 2018).

Jeyanthi, Mansurali, Harish, and Krishnaveni (2020) argue that the survival of mobile operators depends on proper information technology systems, which serve as the backbone for operational efficiency and informed decision-making. In essence, information technology is an enabler and essential component of delivering business operations. This is where customer value management technology comes to the forefront (CVMT). CVMT enables marketing initiatives that empower businesses to enhance their operational efficiency. By leveraging innovative strategies and tools, CVMT enables companies to reach their target audiences effectively.

The adoption of this technology requires larger storage facilities and systems capable of processing data at a high rate. Such requirements stem from the inherent nature of the technology, which generates vast amounts of data that must be efficiently managed and analysed to drive meaningful insights (Jeyanthi et al., 2020). This shift not only enhances operational efficiency but also improves customer engagement by leveraging advanced technologies such as artificial intelligence and big data analytics (Golightly, Chang, Xu, Gao, and Liu, 2022)

Additionally, customer value management technology continues to evolve rapidly, and mobile operators must respond promptly to remain relevant and beneficial. Customer needs also develop over time. For operators to stay aware of the changing times and new transformations, they must be alert. Therefore, operators must meet their customers' demands and respond promptly to remain in business.

1.3. Statement of the problem

It is worth noting that for decades, mobile operators have relied solely on market penetration strategies to increase their market share (Das and De, 2023). These strategies did not necessitate significant technological advancements or innovations, allowing companies to prioritise immediate market presence over long-term technological development. In markets where the level of penetration has surpassed 100%, the effectiveness of traditional strategies has been called into question. This phenomenon indicates that the market has reached a saturation point, where the number of users or consumers exceeds the total addressable market. In such scenarios, conventional approaches that rely on increasing market share or expanding customer bases may no longer yield the desired results (Das and De, 2023).

In Eswatini, the mobile telecommunications sector faces significant challenges due to its reliance on manual processes and outdated technological infrastructure. This dependence not only hampers operational efficiency but also limits the industry's potential for innovation and growth. In contrast, telecommunications operators globally have successfully harnessed the advantages of modern technology, enabling them to enhance their economic performance through strategies centred on customer value-based management. As highlighted by Meena and Geng (2022), these advancements enable more effective customer engagement, leading to improved service delivery and increased profitability. The disparity between Eswatini's current practices and the more progressive approaches adopted elsewhere underscores the urgent need for modernisation within the local telecommunications landscape to remain competitive and responsive to consumer demands.

1.4. Mobile telecommunication in Eswatini

The liberalisation and regulation of mobile telecommunications in Eswatini have led to a significant influx of new market participants. This shift has effectively removed previous obstacles, resulting in a competitive environment where new entrants can operate on an equal basis with established players. Ramani and Srinivasan (2019) contend that this liberalisation not only facilitates the entry of new companies but also stimulates overall industry growth. Supporting this view, Agiakloglou and Polemis (2018) highlight the rapid expansion of the telecommunications sector in Europe following market liberalisation, with notable growth observed particularly in countries like the United Kingdom and Denmark. This evidence underscores the potential benefits of a deregulated market, suggesting that similar outcomes could be anticipated in Eswatini as the telecommunications landscape continues to evolve.

In the African context, as in the rest of the world, the industry has been undergoing significant transformation since the early 1990s. The purpose of this transformation was to eliminate the monopoly in the telecommunications sector, which was dominant at the time. Furthermore, Agiakloglou and Polemis (2018) note that the global shift towards open markets compelled African countries to deregulate the industry, leading to increased competition and the emergence of new market players. This transition not only encouraged innovation but also attracted foreign investment, which was essential for economic growth and development across the continent.

Notably, the kingdom of Eswatini was one of the last countries in the world to abolish monopolies. Thus, before this transformation, the telecommunication industry in Eswatini was dominated by Eswatini MTN, as the monopolistic mobile phone operator held a monopoly for more than a decade, with Eswatini MTN remaining the sole mobile operator until recently. The kingdom of Eswatini was one of the last countries in the world to abolish monopolies. In 2013, the Eswatini Communication Commission (ESCCOM), a telecommunications regulatory authority, was established. Since then, the country has registered two more operators.

In 2016, ESCCOM released a report stating that mobile market penetration in the country is significantly above the regional average. Additionally, the report states that the deregulation of the sector has led to a competitive market. In 2019, the country recorded a 96 per cent rate, with metropolitan areas accounting for a larger share than rural areas. It is the second-highest rate in sub-Saharan Africa.

The GSMC Intelligence 2021 report (GSMC, 2021) predicts that customer acceptance of 5G is expected to exceed 20 per cent of worldwide cellphone usage by 2025. This anticipated surge in adoption is particularly pronounced in nations at the forefront of 5G advancements, including China, the United States, various Asian countries, Australia, and select European regions. In contrast, the African continent shows a more limited rollout, with South Africa, Nigeria, and Kenya emerging as the primary leaders in the deployment of commercial 5G services. Notably, mobile operators in Eswatini have begun upgrading their infrastructure to accommodate 5G technology, indicating a gradual yet significant shift toward enhanced mobile connectivity in the region. (Tsoulos, Athanasiadou, Zarbouti, Nikitopoulos and Christopoulos, 2024).

These upgrades to newer technologies demonstrate that mobile operators perceive the adoption of technological advancements as a new driver for business continuity. From a global perspective, it is projected that approximately 60% of mobile operators in growing and advanced markets have already deployed customer value management technology. It is reported that all mobile operators in South Africa have adopted and implemented CVM technology (Alolayan and Al-Kaabi, 2020).

1.5. Research questions

1. What are the technological factors that influence mobile operators' adoption of CVM technology in Eswatini?
2. What are the organisational factors influencing the adoption and usage of CVM technology by mobile operators in Eswatini?
3. What are the environmental factors that influence the adoption of CVM technology by mobile operators in Eswatini?
4. How well do the technology, organisational, and environmental measures predict the adoption of CVM technology by the mobile operators in Eswatini?

1.6. Research objectives

1. To ascertain the technological factors that influence mobile operators' adoption of CVM technology.
2. To understand the organisational factors that influence the adoption and usage of CVM technology by mobile operators in Eswatini.
3. To determine the environmental factors influencing the adoption and usage of CVM technology by mobile operators in Eswatini.
4. To determine the level of CVM technology adoption and usage by mobile operators in Eswatini.
- 5.

1.7. Research methodology

This study employed quantitative methods, with a survey approach being the preferred method. The survey utilised closed-ended questions sourced from previous research studies to acquire data. This study's research participants were drawn from all permanent staff members of Eswatini MTN based at the head office and two service centres in Mbabane and Manzini. The research participants include 8 in top management, 30 in middle management, and 216 in lower management.

The researcher thoroughly addressed all ethical considerations related to the study. Before data collection commenced, approval was obtained from the University of KwaZulu-Natal, ensuring that the research adhered to institutional guidelines and ethical standards. Additionally, informed consent was acquired from all participants involved in the study.

1.8. Significance and contribution of the study

Customer value management technology represents a relatively new concept within the context of Eswatini, resulting in a significant gap in understanding and expertise in this field. This study shall contribute to the body of information from the country's perspective. The study's findings highlight the advantages that are associated with modern information technology in the mobile sector. Technology presents several benefits and challenges that require ongoing monitoring through research. Furthermore, the study's results provide valuable insights for future use. Additionally, these operators may use the research study's findings as a point of reference to inform their decision-making.

1.9. Overview of the study

This research is divided into six chapters, as outlined below.

- **Chapter One:** This chapter lays the foundation of the research and is divided into two sections. The first section introduces the research problem statement, background, and the theories that underpin the study.
- **Chapter Two:** This chapter presents a review of the academic literature relevant to the adoption of customer value management and the appropriate technology by mobile operators. In this chapter, the concepts of CVM technology are explained. The focus was on the technology relevant to the subject matter. This chapter also examines the newer technology that is predominantly utilised by other operators worldwide. The research approach used as a guide to conduct the quantitative investigation is reviewed in the next chapter.

- **Chapter Three:** This chapter analyses the relevant literature to the study questions and objectives. The chapter also discusses various types of theoretical frameworks, focusing on the Technology, Organisation, and Environment (TOE) framework, which applies to the study. It presents an overview of the telecommunications industry, focusing on the adoption of customer value management technology by mobile operators in general and specifically in Eswatini.
- **Chapter Four:** This section presents the data-gathering strategies and information about the research approach and methodology. It presents and elaborates on the plan and how the study was conducted. The methodology section provides detailed information about the data collection method, the research instrument developed, and the data analysis approach. A quantitative approach was adopted, and an online survey was conducted using a closed-ended questionnaire. This chapter also elaborates on the ethical considerations that were observed throughout the research process.
- **Chapter Five:** This chapter presents the analysis of the quantitative data obtained from questionnaires issued to targeted respondents. First, the demographic profile of the respondents, as well as their basic knowledge of customer value management, is considered. This includes descriptive statistics and frequency tables. The researcher further discusses advanced statistical computations to answer the third research question.
- **Chapter Six:** This chapter summarises the research and examines the responses to the questions under investigation. It further discusses the study's limitations, provides some recommendations, and ultimately concludes the study.

Chapter Two: Literature Review

2.1. Introduction

This section aims to explore the fundamental concepts related to Customer Value Management Technology (CVMT) and the accompanying strategies. To facilitate this exploration, the chapter undertakes an extensive review of existing literature on CVMT, aiming to identify any gaps or shortcomings that the present study will address. By examining the theoretical foundations of CVMT, the chapter not only elucidates the core principles that govern this field but also prepares the groundwork for a more profound comprehension of how these technologies can be strategically employed to enhance customer value.

2.2. Customer value management

Research review reveals that customer value management has become one of the most crucial developments in marketing. It has emerged as one of the most researched and analysed themes in the field of marketing science. Furthermore, this topic has highlighted the importance of customer value management within the mobile telecommunications industry. Lemon and Verhoef (2016) concluded that customer value management is an organisational strategy that maximises the value delivered to target markets, thereby gaining a competitive advantage and leveraging profitability.

One of the most crucial aspects of CVM is customer value, which is the revenue that an organisation generates from an individual customer. It focuses on the organisation's customer base by analysing personal data sets. As a result, more customer data is collected and stored from all the channels through which customers interact with the organisation.

This information is critically analysed to gain insight that will inform future business decisions. Historically, conventional marketing approaches overlooked the significance of customer data as a vital element in shaping marketing tactics (Shah and Murthi, 2020). In contrast, customer value management prioritises the examination of customer data to enhance their overall value through strategies that are informed by data analytics.

The availability of customer databases drives customer value management gathered from every touchpoint the customer uses to engage with the organisation. The availability of customer data has enabled organisations to build large data warehouses with real-time feeds that can enhance customer analysis. Gupta, Kushwaha, Badhera, Chatterjee, and Gonzalez (2023) emphasise the importance of adopting a customer-centric approach rather than customer value management, arguing that businesses should prioritise the needs and preferences of their customers over the technologies they employ. They further claim that technology plays a crucial role in managing customer value. Lemon and Verhoef (2016) emphasise the importance of both elements in their analysis. They argue that a balanced approach, which considers the interplay between these aspects, is crucial for achieving optimal outcomes.

2.3. Definition of customer value management

The definition of CVM is tenuous. Thus, over the years, several scholars have attempted to define the concept of CVM. For example, Kotler (2017), Shukla, Arun, Shukla, Clinton, and Mehendale (2018) and Lemon and Verhoef (2016) define CVM from the perspective of processes and strategies for maximising the worth of the business's clients through enhancing profitable relationships with the customer base and tailoring products to fit the customer's needs best. They state that its primary focus is on analysing each client's and prospect's data. This view is advanced by Mohamed's (2020) understanding of CVM, which identifies customer value management as a management strategy where clients are viewed as the business's most valuable resource. By structuring operations around clients' connections, their value may be quantified and raised.

A different perspective on CVM is presented by Eggert, Frow, Payne, and Steinhoff (2020), whose understanding of customer value management foregrounds it as the sum of the economic worth of every source of revenue that customers generate for the business throughout their lifetime, minus the expenses incurred by those customers. Thus, in line with the available definitions, this study prefers to define CVM as the optimisation of customer usage data to deliver business value. It is worth noting that customer value management relies on information technology to function effectively.

Today, mobile telecommunications organisations face significant challenges from local and global competitors. The mobile market has reached a saturation point due to the industry's volatility. In the past, these organisations relied on a larger market share and, on average, revenue per subscriber (Ventos-Santaularia et al., 2020). For these organisations to thrive, they must cultivate long-term relationships with their customers.

Customer value management enables organisations to focus on individual data analysis and utilise that information to influence customer behaviour. This information can be used to acquire and retain customers, as well as influence customer behaviour. Research also indicates that organisations that focus more on the customer side of CVM tend to perform better than those that do not prioritise this aspect (Mohamed, 2020). All marketing efforts aimed at enhancing customer engagement with the organisation are consistent across all channels. As a result, an organisation that adopts and implements CVM improves its profitability by 5% and retains lucrative customers (Eggert et al., 2020).

Customer value management is rooted in relationship marketing, which focuses on measuring key constructs such as trust, loyalty, and the overall customer experience. Traditional relationship marketing did not consider constructs such as customer usage behaviour and data as critical information. On the contrary, CVM considers these components as necessary, and it focuses on analysing customer data to enhance business value and retain high-value customers. Technology enables organisations to capture, store, retrieve, and analyse vast volumes of data sets in real time. On the other hand, customers can access products and services in real time through various touchpoints.

The technology utilised by the organisation concerning CVM should benefit the customer and enhance customer management. In this approach, technology facilitates data storage, acquisition, and accessibility (Ventos-Santaularia et al., 2020). Ultimately, customer-centric CVM necessitates the effective management of customer lifetime value, profitability, and customer satisfaction.

2.4. Information technology and Customer value management

Technological advancements are critical to the growth of industries and the evolution of telecommunications. The industry has undergone a significant transformation due to technological advancements. The World Bank defines information, communications, and telecommunications as a set of tasks that allow data to be analysed, exchanged, and presented electronically (Kumar and Zymbler, 2019). They further suggest that it enables individuals to trade, obtain, and disseminate information, as well as communicate via internet connections. While technology has long been utilised in the telecommunications industry for call setup and communication, with call duration records captured and stored in data centres, recent advances in the World Wide Web (Internet) and big data analytics are enabling telecommunications organisations to break new ground.

Information technology broadly encompasses the use of computer systems to organise, manage, store, and exchange data. This field uses processing power, embedded sensors, and vast storage capacity. On the one hand, IT enables customers to access the organisation's products and services through various channels. For instance, most personalised offers are accessible via Unstructured Supplementary Service Data (USSD). On the other hand, customer value management entails optimising the value of individual customers, focusing on explicitly analysing customer purchase behaviour (Kraus, Jones, Kailer, Weinmann, Chaparro, and Roig-Tierno, 2021).

Similarly, information technology enables customers to connect with organisations and facilitates the delivery of product offerings. It also collects customer data and stores it in database management systems. Without technological advancements, transforming data into meaningful insights has been proven to be a significant challenge for organisations (Kraus et al., 2021).

Through technology, telecommunication organisations connect with their customers using various channels. Additionally, mobile technology enables organisations to reach previously unreachable marginalised customers. For instance, products can be designed based on location and customer needs. Furthermore, technology enables mobile organisations to collect and analyse customer data. Mobile organisations utilise technological advancements to maintain market sustainability.

They innovate to remain relevant in the industry and protect their market share (Parcu Rossi and Brennan, 2022). As a result, mobile organisations are forced to adopt modern technologies that will enable them to cope with the increasing volumes of traffic and data.

According to Nchake and Shuaibu (2022) there has been a substantial rise in interest in technological adoption in mobile telecommunications. The change is perpetuated or influenced by digital transformation and innovation. New entrants are entering the market with considerable innovation. The mobile technological change depends on the advancement of enabling technologies. These technologies include network technologies (IoT), infrastructure, cloud services, massive datasets, and machine learning (ML).

The government, a key institution in the telecommunications sector, actively advocates the change. Across the globe, the mobile industry is now regulated, and policies are being developed to govern it. Moreover, the government facilitates the development of infrastructure and strategically positions it to promote growth. Infrastructure development is integral to sustained growth in the industry. The government also ensures that fair practice policies are implemented and observed. It also provides an environment that attracts new investors to the industry and eliminates barriers that hinder competition, thereby attracting new investors (Nchake and Shuaibu, 2022).

2.5. Understanding customer value management technology

The mobile telecommunications sector has undergone significant transformation due to the widespread adoption of innovative technologies. This evolution is driven by the necessity for mobile operators to allocate substantial financial resources towards enhancing their technological infrastructure. As highlighted by Chivandire, Botha and Mouton (2019), the process of diffusion not only involves the integration of new technologies but also necessitates a strategic approach to capital investment. Operators must navigate the complexities of rapidly changing consumer demands and competitive pressures, which compel them to upgrade their systems and services to stay competitive continually. This ongoing investment is crucial for maintaining market relevance and ensuring that operators can deliver high-quality connectivity and advanced features to their customers.

Customer value management technology encompasses all the technologies employed by mobile operators to maximise customer value by enhancing profitable relationships and tailoring products to their specific needs (Wagh, Andhale, Pansare, Ambadekar, and Gawande, 2023). The primary goal of CVMT is to streamline customer management processes, improve customer engagement, and maximise revenue. These systems encompass social media platforms and all customer contact tools, which facilitate the development of relationships and ongoing communication between customers and businesses.

The integration of Customer Value Management Technology within the mobile telecommunications sector is crucial for enhancing customer engagement, boosting conversion rates, and increasing overall customer satisfaction, as highlighted by Wagh et al. (2023). For mobile operators to sustain their competitive edge, it is essential to prioritise not only market share and customer acquisition but also the technological dimensions of their operations. Achieving this goal necessitates a well-defined strategy for adopting advanced information technologies, including artificial intelligence, machine learning, and cloud computing. According to Kitchens, Dobolyi and Abbasi (2018), the effectiveness of customer value management technology is significantly dependent on the use of integrated systems capable of capturing and analysing customer data. Their research highlights the transformative impact of technology on business practices, demonstrating how mobile companies utilise advanced tools to understand better and cater to customer needs. To elaborate further, let's examine the various CVMTs that have transformed the mobile telecommunications industry within the digital economy.

2.5.1. Artificial intelligence

Artificial Intelligence (AI) can be broadly categorised into two main types: Machine Learning (ML) and Expert Systems (ES). These classifications enable AI systems to harness vast amounts of data, allowing them to perform complex analyses, make informed judgments, and generate predictions with remarkable accuracy. Machine learning focuses on algorithms that improve automatically through experience, learning from data patterns without explicit programming. In contrast, expert systems are designed to emulate the decision-making abilities of a human expert in specific domains, utilising a knowledge base and inference rules to solve problems (Burns, 2020).

The integration of artificial intelligence (AI) within mobile operators has seen significant expansion over the years, primarily aimed at gaining insights into customer behaviour and preferences. This technological advancement enables companies to analyse vast amounts of data, allowing them to identify trends and patterns that inform the development of customised products and services tailored to meet the specific needs of their subscribers (Burns, 2020).

2.5.2. Machine learning

Machine learning (ML) has the remarkable capability to process vast amounts of data, enabling it to identify specific trends and patterns that often elude human observation. Through sophisticated algorithms, ML systems can analyse complex datasets at a speed and accuracy that surpasses human capabilities. This rapid learning process allows these algorithms to make predictions with a high degree of precision, often without the need for human oversight or intervention, thereby facilitating a level of automation that enhances efficiency in various applications (Burns, 2020).

2.5.3 Big data technology

This category includes advanced data mining processes that analyse customer behaviour based on product and service usage. These processes utilise a range of algorithms and analytical methods to uncover patterns and trends in usage, allowing businesses to gain insights into customer preferences, purchasing habits, and overall satisfaction. It also includes business intelligence tools for data visualisation. In the telecommunications industry, data volumes occur in real-time mode, and they must be extracted from various nodes to generate valuable insights that can inform business decisions quickly. The ability to access and analyse this data promptly allows businesses to respond swiftly to market changes, optimise operational efficiency, and ultimately gain a competitive edge in a rapidly evolving industry landscape (Tope-Oke, Afolalu, and Omofade, 2019).

2.5.4. Customer relationship management system

Customer relationship management (CRM) systems play a crucial role in integrating customer information, providing mobile operators with a comprehensive 360-degree view of their clientele. This holistic perspective enables organisations to enhance communication strategies and tailor their offerings to meet the specific needs and preferences of individual customers. CRM systems facilitate a deeper understanding of customer journeys. As a result, mobile operators can engage in more personalised marketing efforts, ensuring that promotions and communications resonate with the target audience (Kotler, 2017).

2.5.5. Multi channels

Online media platforms, including Facebook and Instagram, as well as inbound and outbound channels and specialised multimedia channels, fall under this category. The review of existing literature suggests that a substantial number of businesses, particularly within the telecommunications industry, have adopted contemporary technologies to enhance their customer communication strategies in an increasingly digital landscape. This shift towards digital communication is driven by the necessity to meet evolving consumer expectations and to leverage the advantages offered by technological advancements. This transformation reflects a broader trend across multiple sectors, where the adoption of digital communication technologies is becoming essential for maintaining competitiveness and relevance in a fast-paced market environment (Nadkarni and Prugl, 2020).

2.5.6. Campaign management platforms

Campaign management platforms facilitate the execution of both automated and interactive marketing campaigns, encompassing both inbound and outbound strategies. These platforms are designed to effectively target customers by delivering real-time offers tailored to specific, time-sensitive, and location-based events. These systems enable marketers to engage with their audience in a more personalised manner, enhancing the likelihood of conversion. The integration of automation allows for the seamless execution of campaigns, ensuring that relevant messages reach consumers at the optimal moment, thereby maximising engagement and driving sales. Furthermore, the interactive nature of these campaigns fosters a two-way communication channel,

allowing businesses to gather valuable feedback and insights from their customers, which can be utilised to refine future marketing efforts (Nadkarni and Prugl, 2020).

2.5.7. Operational technology

This category includes automated processes for customer value management, including dedicated campaign management systems. These technologies incorporate big data technology, real-time triggers, cloud solutions, intelligent machines, and learning machines. The advancement of these technologies has introduced novel methods for handling customer data. This evolution has led to the development of innovative strategies that enhance data processing capabilities, allowing businesses to derive actionable insights from vast amounts of information (Sobocinska and Mazurek-Lopacińska, 2021)

2.6. Factors influencing the adoption of CVM technology

The Technology Acceptance Model (TAM) provides a framework for understanding the factors that organisations consider when they decide to adopt and implement new technologies. Central to this model are two key elements: behavioural intentions and attitudes towards technology adoption. These elements are significantly shaped by users' perceptions of the benefits that the technology offers, as well as the convenience associated with its use. Essentially, suppose individuals perceive a technology as beneficial and easy to use. In that case, they are more likely to develop positive attitudes and intentions toward its adoption, thereby facilitating a smoother integration process within the organisation (Feng et al., 2020).

In contrast, the Unified Theory of Acceptance and Use of Technology (UTAUT) expands upon the foundational concepts of TAM by introducing four critical constructs that influence technology acceptance. These constructs include performance expectancy, which refers to the degree to which users believe that using the technology will enhance their job performance; effort expectancy, which pertains to the ease of use associated with the technology; social influence, which captures the impact of peers and social networks on an individual's decision to adopt the technology; and ultimately, the behavioral intention to use the technology itself. By incorporating these dimensions, the UTAUT model offers a more comprehensive understanding of the various factors that drive

technology acceptance in organisational settings, highlighting the interplay between individual perceptions and social dynamics (Feng et al., 2020).

The Technology, Organisational, and Environmental (TOE) framework provides a comprehensive perspective on the factors influencing technology adoption within organisations. This framework encompasses various measurable constructs, including relative advantage, compatibility, perceived ease of use, and reduced time-to-market. Additionally, it emphasises the importance of documentation, improved customer collaboration, shared learning, enhanced communication, and productivity. The framework also emphasises the importance of better predictability and increased transparency as key elements that can facilitate the adoption process. By focusing on these constructs, the TOE framework allows organisations to assess the potential benefits and challenges associated with new technologies, thereby guiding their decision-making processes (Abed, 2020).

Moreover, the TOE framework acknowledges that the technological attributes themselves do not solely determine technology adoption but are also significantly influenced by contextual factors. These include the size of the company, the number of employees, the prevailing organisational culture, and the legal regulations that govern the industry. Such factors can either facilitate or hinder the adoption process, as they shape the organisational readiness and willingness to embrace new technologies. By considering both the technological and contextual dimensions, the TOE framework offers a holistic understanding of the complexities involved in technology adoption, enabling organisations to navigate the challenges and leverage the opportunities presented by technological advancements (Abed, 2020).

2.7. Challenges and limitations of customer value management technology.

The implementation of Customer Value Management (CVM) technology presents several challenges and limitations, particularly in the realm of machine learning. This technology necessitates a substantial amount of data for practical interpretation and learning processes, which in turn demands significant storage capacity to accommodate this data for future decision-making. As highlighted by Haefner, Parida, Gassmann, & Wincent (2023), the requirements for data are continually increasing, posing a challenge for organisations that must not only collect but also manage and analyse vast datasets. This escalation in data needs can strain existing infrastructure

and necessitate investments in additional resources, complicating the overall management of customer value.

Another critical aspect of CVM technology is the complexity associated with data mining and analytics. These processes require a high level of expertise, often leading organisations to recruit specialised professionals to supplement their internal capabilities, as noted by Haefner et al. (2023). Furthermore, the financial implications of adopting artificial intelligence and machine learning technologies cannot be overlooked. The implementation of these advanced systems demands considerable financial investment, including the acquisition of cutting-edge hardware and software to ensure that organisations remain competitive and up-to-date. This high cost can be a significant barrier for many businesses, notably smaller enterprises that may struggle to allocate sufficient resources for such initiatives.

2.8. Extent of use of CVM technology in the mobile industry.

Customer value management (CVM) technology, as outlined by Kotler (2017), encompasses the suite of tools utilised by mobile telecommunications providers to oversee platforms dedicated to managing customer value and to facilitate interactions through various digital channels. This technology is essential for enhancing customer engagement and optimising service delivery. CVM technology can be categorised into three distinct types: operational technology, which focuses on the day-to-day processes and systems that support customer interactions; analytical technology, which involves the use of data analysis to gain insights into customer behavior and preferences; and collaborative technology, which emphasises the importance of teamwork and communication among different departments within an organisation to ensure a cohesive approach to customer value management. Each of these categories plays a crucial role in enabling telecommunications operators to meet customer needs and improve overall satisfaction effectively.

2.9. Extent of use of CVM technology in the Eswatini mobile industry

It is imperative to comprehend the extent of CVM services' utilisation in Eswatini's mobile industry, as well as the perceptions of mobile operators regarding the advantages and obstacles associated with customer value management technology. Moreover, little is known about customer value management in the market and its contribution to the company's total revenue. The mobile

industry in Eswatini has been dominated by a single operator, Eswatini MTN, for over ten years. The market has since been liberalised, and a new independent regulatory authority was established in late 2013. Since then, market penetration has grown rapidly, reportedly exceeding the regional average. Thus, the market is now saturated, and competition is high. Gao (2021) argues that a liberated industry increases competition by attracting new entrants and fostering new ideas for growth.

They further state that competition and innovation are crucial for survival. Due to market forces, mobile operators in the country are seeking better ways to remain competitive and profitable. Customer value management has been identified as one of the key performance attributes that can help organisations achieve their objectives. The utilisation of CVM and technology has a significant influence on the current digital world. Moreover, integrating digital data, automation technology, and real-time triggers into marketing activities is a top priority in the telecommunications sector.

Kucia, Hajduk, Mazurek, and Kotula (2021) highlight that the implementation of CRM systems in modern marketing poses a major challenge. Similarly, the advancement of CVM technologies has resulted in the rise of dynamism in the market, which is difficult to implement. CVM technology integrates various customer information about customers (360-degree view). The technology is used to collect, store, analyse, and visualise customer information.

2.10. Telecommunication sector landscape in Eswatini

The kingdom of Eswatini is among the last African countries to have liberalised its ICT sector in 2013. Since then, it has been promoting and developing ICT policies and strategies. Before the liberalisation, the telecommunications sector was dominated by a single player. In 2013, the government made a significant decision to end the monopoly, and subsequently, a regulator was established. The intention was to embrace competition and innovation in the sector. Two more mobile operators were introduced to create a robust and aggressive market.

The general perception was that the Eswatini market was characterised by limited competition and dominated by a single operator. In the African context, the literature indicates that the telecommunications industry in the early 1980s was traditionally monopolised and owned by the business community, with little intervention from the government. Over the years, however, we have seen governments across Africa taking the lead in infrastructure development, policy formulation, and establishing independent regulators. The liberalisation process has enabled the market to be conducive for new players to develop new businesses. For example, most mobile operators have established mobile money as a new source of revenue. Since 2013, mobile operators in the Kingdom of Eswatini have sought to transform traditional platforms into digital ones and capitalise on the opportunities presented by this innovation. Moreover, as noted in Eswatini's National Development Plan (NDP) 2019-2022, this industry has been seen as a facilitator of long-term development and GDP growth.

Following the deregulation of the telecommunications industry in Eswatini in 2013, the mobile market is comprised of three operators: Eswatini MTN, Eswatini Mobile, and Eswatini Post and Telecommunications. (EPTC). The telecommunications sector in the country is led by the two most prominent players: MTN and Eswatini Mobile. The two operators are privately owned, and the government owns EPTC. According to the Eswatini Telecoms market report (2023), mobile users overall and the market penetration are significantly higher than the African average. The average revenue per user (ARPU) is one of the highest in Africa.

MTN Eswatini is the leading telecommunications provider in the country, holding an estimated market share of approximately 60%. This leading operator caters to a diverse customer base, delivering both mobile and fixed-line services to over one million subscribers. In contrast, Eswatini Mobile holds a market share of approximately 40%, serving a substantial clientele of more than 500,000 subscribers with comparable telecommunications offerings. The competitive landscape between these two operators is characterised by their ongoing efforts to capture a greater market share while simultaneously focusing on retaining their most profitable customers. This rivalry not only drives innovation and service improvements but also enhances the overall telecommunications experience for consumers in Eswatini.

2.11. Summary

This chapter presents a comprehensive review of the academic literature on the adoption of customer value management (CVM) by mobile operators, along with the associated technologies they employ. It delves into the various aspects of CVM technology, emphasising those that are particularly pertinent to the topic at hand. Furthermore, the chapter examines emerging technologies that are predominantly utilised by mobile operators worldwide, highlighting trends and innovations that may shape future practices. The subsequent chapter will delve into the theoretical framework that underpins this research, providing a foundation for understanding the implications of the findings discussed in this chapter.

Chapter Three: Theoretical Framework

3.1. Introduction

This chapter elaborates on the theories that are important to the research study. A theoretical framework, built on one or multiple theories, provides the rationale as well as the structure for the research study. It is used to explain the concepts that will be discussed in a critical and in-depth manner. Moreover, it is a conceptual model that guides the research study. Mensah, Agyemang, Acquah, Babah and Dontoh (2020) state that the theoretical framework explains the relationships among key constructs, variables, and factors of the study. Theories are utilised to guide the study, to predict and explain the research outcomes.

3.2. Reasons for using the TOE conceptual framework

The frameworks under discussion encompass several prominent theories, including the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and the Technology, Organisation, and Environment (TOE) Framework. Each of these models offers a distinct perspective on the factors influencing technology adoption and utilisation. A detailed summary of these frameworks is provided in Table 3.1, which outlines their key components and theoretical underpinnings, offering a valuable reference for further exploration of technology acceptance dynamics.

Table 3.1: Technology Adoption Frameworks

Framework	Influence	Source
Technology Acceptance Model (TAM)	Perceived Usefulness & Perceived ease of use	Awa and Emecheta (2015)
The Unified Theory of Acceptance and Use of Technology (UTAUT)	Performance Expectancy, Effort Expectancy, and social influence,	Basak (2015)

Organisation and Environment framework (TOE).	Technological, Organisational, and Environmental	Maduku, Mapinganjira and Duh (2016)
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Mpinganjira, M., & Duh,

Research has been conducted to explore the various factors that affect the adoption of CVM technology within organisations. A thorough review of existing literature revealed that the Technology, Organisation, and Environment (TOE) framework is particularly well-suited for guiding this investigation. By employing the TOE framework, the study aims to uncover critical insights that can inform strategies for enhancing technology acceptance in diverse organisational settings. 3.2. Reasons for using the TOE conceptual framework

Researchers employ a variety of conceptual frameworks to analyse the adoption of information technology, with the Technology Acceptance Model (TAM) emerging as the most widely utilised framework for understanding this phenomenon. The current body of research suggests that the Technology Acceptance Model (TAM) provides a comprehensive framework for understanding the various factors that affect users' acceptance of technology. Awa and Emecheta (2015) contend that many prior investigations into information technology adoption within organisational contexts have frequently neglected essential dimensions of this phenomenon. This oversight has resulted in considerable gaps in the overall comprehension of the complexities surrounding technology adoption. They propose that the Technology-Organisation-Environment (TOE) framework can substantially bridge these gaps by incorporating a comprehensive set of elements that account for both organisational and individual factors. This holistic approach enables a more nuanced examination of how various contextual factors influence the adoption process, thereby enhancing the overall understanding of technology integration in organisational settings.

Awa and Emecheta (2015) propose that the Technology-Organisation-Environment (TOE) framework can enhance our understanding of the factors that affect the adoption of innovations within organisations. This model is structured around three key dimensions: the technological context, which encompasses the tools and systems available; the organisational context, which includes the internal characteristics and culture of the organisation; and the environmental context,

which refers to the external factors influencing the organisation, such as market trends and regulatory conditions.

Given these components, the TOE framework is deemed suitable for the research at hand, as it provides a comprehensive lens through which to analyse the complexities of innovation acceptance. Figure 3.1 illustrates the relevant frameworks that underpin this study, highlighting their significance in exploring the dynamics of innovation within organisational settings.

Figure 3.1: Research model for CVM Technology Adoption

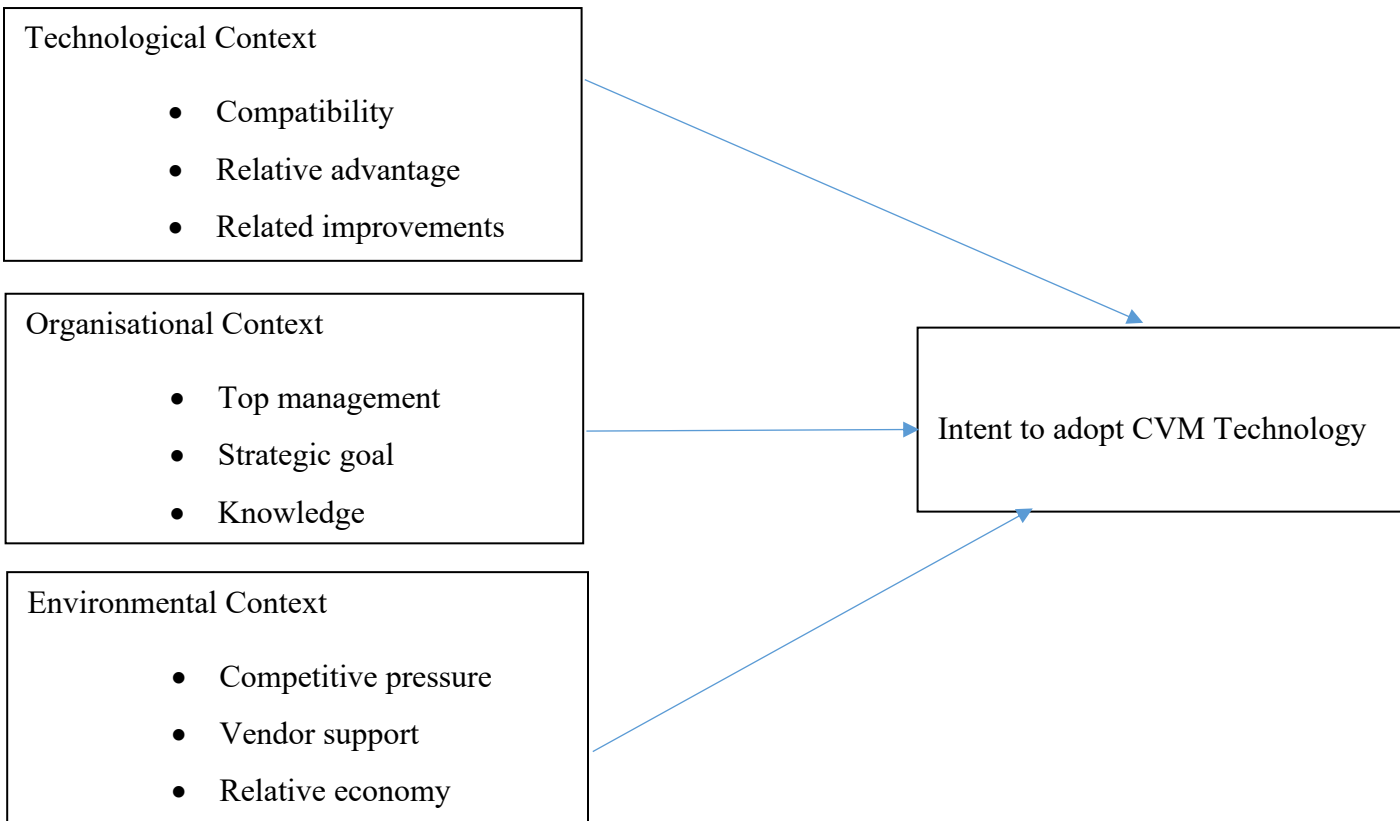


Table 3.2 provides a comprehensive overview of the constructs and variables associated with each, along with their respective definitions and meanings. This table serves as a crucial reference point, elucidating the intricate relationships between the theoretical frameworks and the empirical measures employed in the study.

Table 3.2: TOE framework variables

Constructs	Definitions
Technological	
1. Compatibility	The level to which a new idea is deemed compatible with present beliefs, former experiences, and adopter desires.
2. Relative advantage	How a new idea is perceived as superior to the concepts it replaces.
3. Relative improvement	The rate at which an invention or new technology can enhance an already-existing process or service.
Organisational	
1. Top management support	Support of executive and senior management for the IT adoption initiative
2. Strategic goal	A particular long-term goal the company hopes to accomplish (both monetary and technological gains).
3. Knowledge	The level to which the application of the technology knowledge is found to be most helpful and straightforward to understand.
Environmental Constructs	
1. Competition pressure	Competition and intense rivalry increase the chances of innovation adaptation, enabling companies to acquire a competitive advantage.
2. Vendor support	External intervention that influences the implementation process and acts as a barrier towards IT use.
3. Relative economy	The extent to which technological applications improve productivity and enable economic growth.

3.3. Technological construct

The technological components of an organisation are embedded within its structural framework, often referred to as its infrastructure. For an organisation to effectively integrate new technologies, it is essential to possess a robust IT infrastructure, a workforce that is adept in technological skills,

and a commitment to fostering a culture of innovation. According to Talukder and Quazi (2019), these elements are critical for successful technology adoption. Moreover, organisations must also prioritise continuous training and development to ensure that employees can adapt to evolving technologies. Talukder and Quazi (2019) emphasise that the successful implementation of technology hinges on three key dimensions: relative advantage, compatibility, and complexity. Merely having access to technological resources is insufficient; organisations must also cultivate an innovative culture that encourages experimentation and adaptability. This cultural aspect is vital, as it influences how employees perceive and engage with new technologies, ultimately determining the overall effectiveness of the adoption process.

Talukder and Quazi (2019) further emphasise the critical role that certain factors play in the adoption of technology within organisations. They argue that for firms to embrace new technological advancements effectively, it is essential to possess a robust IT infrastructure alongside a workforce equipped with the necessary technical skills. Additionally, the authors suggest that organisations with prior experience in innovation are more likely to be receptive to adopting new technologies. In any organisation, it is crucial to encourage employees to seek innovative ideas to stay ahead of the competition continually. The technology context in similar studies examines the variables of compatibility, complexity, and relative advantage as measures of the technological context. Lutfi and Mohamad (2016) suggest that these characteristics have an impact on the acceptance of new technological advancements.

Relative advantage

The advantages of incorporating information technology into customer value management are predominantly derived from the improvements that businesses experience as a result of this adoption. As articulated by Maduku et al. (2016), the concept of relative advantage refers to the degree to which a new idea or technology is perceived as superior to its existing alternatives. This perception of superiority is crucial, as it often translates into tangible benefits, including financial gains. By leveraging information technology, organisations can streamline their operations, enhance customer engagement, and ultimately improve their value proposition. Such innovations not only facilitate more efficient processes but also enable businesses to respond more effectively to customer needs, thereby solidifying their competitive edge in the marketplace.

Organisations often adopt new technologies when they believe such innovations will provide a competitive edge or help bridge existing performance gaps. Research by Chen and Aklikokou (2020) indicates that the perceived comparative benefits of information technology significantly influence its acceptance within businesses. This notion is further supported by Chiu, Liu, Chen, Yang and Chou (2017), who assert that comparative benefits are among the most critical factors driving the adoption of technological advancements in Malaysia.

Research within the academic community has identified comparative advantage as a vital metric for the adoption of information technology. This concept highlights the potential benefits that organisations or individuals can achieve by implementing innovations that align with their unique strengths and available resources (Handoyo, Suharman, Ghani, & Soedarsono, 2023). Furthermore, the findings indicate that tailored incentives for prospective adopters can play a significant role in enhancing their readiness to accept these technological innovations. Chiu et al. (2017) argue that the adoption of Customer Value Management Technologies (CVMT) is positively correlated with the perceived relative advantages they provide. The existing literature extensively documents the successful deployment of CVM technologies by mobile operators in South Africa and other developed nations. However, there is a conspicuous lack of understanding regarding the benefits and relative advantages of CVMT for mobile operators in Eswatini, highlighting the necessity for further research in this domain.

Compatibility

According to Bond-Smith (2019), the concept of compatibility refers to the extent to which a new idea aligns with existing beliefs, prior experiences, and the expectations of those adopting it. They emphasise that for an innovation to be embraced, it must resonate with individuals' current beliefs and past encounters. This notion extends to individuals within any organisational context, suggesting that compatibility is a crucial factor in the acceptance of new initiatives. Furthermore, Bond-Smith posits that if organisational leadership is supportive of innovations and can effectively integrate them into the existing framework and operational procedures, the process of implementing new technologies becomes significantly more straightforward. This alignment not only facilitates smoother transitions but also enhances the likelihood of successful adoption among employees, ultimately contributing to the overall effectiveness of the organisation.

Chiu et al. (2017) highlight this notion in their study conducted in Malaysia, emphasising that compatibility plays a crucial role in the adoption process of new technologies. They contend that when senior leadership is confident that contemporary technologies can seamlessly integrate with legacy systems, the likelihood of successful adoption increases. This perspective underscores the importance of aligning technological advancements with the established cultural and operational frameworks within organisations, as such alignment can facilitate smoother transitions and enhance overall acceptance among employees.

Complexity

Hassan et al. (2017) characterise complexity as the extent to which an innovation is perceived as challenging to understand and utilise effectively. In a complementary perspective, Abualrob and Kang (2016) describe complexity as a condition marked by numerous interconnected components that interact in intricate ways. Their research indicates that the perceived sophistication of the technology plays a crucial role in influencing the decision to adopt it. When potential users view a technology as complex, it can significantly deter them from embracing it, highlighting the importance of simplifying innovations to enhance user acceptance and facilitate broader implementation.

3.4. Organisational construct

Understanding how an organisation is structured can provide insights into the pathways through which technology can be effectively implemented and utilised. This comprehension is crucial, as it allows leaders to identify potential barriers to technology adoption, such as hierarchical constraints or communication breakdowns, and to leverage existing strengths within the organisation to promote a smoother transition. The organisation's willingness to adopt new technology is crucial.

Adepoju and Akinwale (2019) argue that the zeal of an organisation can be pretty helpful in the transition of the firm. They further stated that the adoption levels are entirely dependent on the following factors: top management support, organisation size, financial and technical resources, and managerial time. These characteristics have been identified as key elements in any organisation, as they influence the likelihood of technology adoption. However, the research on

technology uptake indicates that the availability of financial resources and senior management's attitude toward technology are the most likely factors influencing new technology adoption (Adepoju and Akinwale, 2019)

Top management support

Executive management plays a pivotal role in shaping the strategic direction of any organisation, as it holds the responsibility for making key decisions that impact the entire entity. The success of any project hinges significantly on the support from top management, which is essential for ensuring that the project aligns with the broader organisational objectives. This alignment is crucial, as it ensures that initiatives are not only relevant but also contribute to the company's overarching goals. The strategic direction set by executive management serves as a guiding framework, allowing projects to be executed in a manner that is coherent with the organisation's vision and mission.

Research by Boritz, Efendi and Lim (2018) indicates that the acceptance of emerging technologies by an organisation's top management is often contingent upon their perception of the associated benefits and risks. When executives assess these factors as favourable, they are more likely to endorse the adoption of new technologies. Complementing this perspective, Maduku et al. (2016) emphasise the importance of executive management support as a fundamental component in understanding how organisations approach the integration of technological innovations. Their findings suggest that the commitment and endorsement from top leadership play a pivotal role in shaping the organisational culture and readiness for change, ultimately influencing the successful implementation of new technological advancements.

Financial and technical resources

Resources in an organisation can be technical, financial, knowledge, or human capital. Therefore, the focus here is on economic and technical resources for implementing cutting-edge technology in a business. In the research carried out by Aryani, Rohayati, Putri and Rinjany (2023), they claim that most organisations in the South African region, small or large, argue that financial and technical resources are the primary reasons they do not adopt new technology. Research on the uptake of innovative technologies indicates that the accessibility of technical and financial

resources impacts adoption. Prior studies demonstrate that these attributes greatly influence the organisational acceptability of innovation.

The research conducted by Taherdoost (2018) highlights the critical role that an organisation's financial resources play in the successful adoption of technology. They argue that without adequate funding, the implementation of new technological initiatives can be severely hindered. Similarly, Abed (2020) emphasises that for any innovative concept to thrive, it is essential to secure the necessary financial backing. This underscores the importance of economic and technical support as pivotal elements in facilitating the acceptance and integration of new technologies within organisations. The interplay between financial resources and technological advancement is thus a fundamental consideration for organisations aiming to remain competitive in an increasingly digital landscape.

3.5. Environmental construct

Taherdoost (2018) emphasises the importance of understanding the environmental factors that impact business operations. The following are examples of ecological characteristics: business pressure, regulation, consumer readiness, vendor support, and infrastructure supporting the business. These determinants will vary depending on the environment in which the company operates, according to a study by Chiu et al. (2017). For example, competitive pressure is most likely in saturated and developed markets. Other scholars argue that competing organisations are pressured to adopt new technology to remain in business or maintain market share. The literature also reveals that some organisations may be pressured by the government and trading partners (Abed, 2020).

Industry pressure (competition)

Crowley and Jordan (2016) contend that a heightened sense of rivalry and competitiveness within industries significantly increases the likelihood of adopting innovations aimed at securing a competitive advantage. Their research indicates that competitive pressure serves as a robust predictor of the adoption of systems and information technology. Furthermore, additional studies corroborate the notion that industry pressure plays a significant role in predicting the adoption of new technologies. This competitive environment compels organisations to emulate or replicate the

technological advancements of their peers, thereby striving to align themselves with industry standards and practices. Such dynamics not only foster a culture of innovation but also create a landscape where organisations feel compelled to keep pace with technological developments to maintain their market position.

A study by Chiu et al. (2017) highlights that competitive pressure is predominantly evident in developed nations that leverage advanced information technology. The authors contend that in sectors characterised by intense competition, it is essential for businesses to stay ahead in adopting technological innovations to capitalise on the benefits that such technologies can offer fully. This perspective contrasts with the findings of Awa et al. (2015), who suggest that while external competition does play a role in the adoption of information technology, it is not a significant determinant in the decision-making process. Their analysis indicates that other factors may have a greater influence on the adoption of technology, indicating a more nuanced understanding of the dynamics at play in different market environments.

Regulation administration

In the early 1990s, the mobile telecommunications sector underwent a significant transformation, characterised by a shift towards liberalisation. This change was primarily driven by government initiatives that introduced regulatory frameworks designed to oversee the industry more effectively. As a result, a wave of new competitors emerged, challenging the existing market dynamics. The liberalisation and privatisation efforts were instrumental in dismantling monopolistic structures, thereby fostering a more competitive environment that encouraged innovation and investment. This shift not only enabled a greater diversity of services and providers but also enhanced consumer choice, ultimately leading to improved telecommunications infrastructure and increased accessibility for a broader segment of the population.

External support

The mobile telecommunications industry relies heavily on external assistance for the deployment and maintenance of information technology systems. Research into the adoption of telecommunication technologies has consistently indicated that employing internal specialists to facilitate the integration of new technologies can be prohibitively expensive. Consequently,

external support emerges as a critical factor influencing the successful adoption of these technologies. Awa et al. (2015) emphasise that external support is a vital component in the actual implementation of information technology solutions. This support becomes even more essential for organisations that lack familiarity with innovative technologies, as vendor assistance can provide the necessary expertise and guidance to navigate the complexities of new systems.

3.6. Chapter summary

This chapter has provided an overview of the theoretical framework that underpins the research investigation. In particular, the Technology, Organisation, and Environment (TOE) framework has been identified as the most suitable model for this study, as it effectively addresses the interplay between technological advancements, organisational structures, and environmental factors that influence the research context. The subsequent chapter will delve into the research methodology employed by the researcher, outlining the systematic approach taken to gather and analyse data, thereby ensuring the rigour and validity of the findings.

Chapter Four: Research Methodology

4.1. Introduction

In this section, the researcher outlines the methodologies and procedures employed to address the research questions posed in the study. The selected research methodology incorporates several essential elements, including data collection techniques, the overall research design and approach, the underlying research philosophy, and strategies for data analysis. By following a structured framework, the research endeavours to achieve its objectives effectively. Rahi (2018) defines research methodology as an empirical and scientific method for addressing problems, highlighting its significance in the systematic examination of the processes used to gather knowledge. This thorough approach not only enhances understanding of the research questions but also ensures that the conclusions drawn are firmly grounded in robust empirical evidence.

4.2 Research philosophy

To undertake a thorough investigation, researchers must adopt a philosophical stance that informs the formulation of specific research questions, the selection of appropriate methodologies, and the overall approach to uncovering answers. As noted by Saunders et al. (2019), research philosophy encompasses a collection of beliefs and assumptions that shape the understanding of knowledge development. Researchers must reflect on their inquiries and convictions to gain insight into their research philosophy. Consequently, before establishing a data collection strategy, researchers must define a philosophical framework that will underpin their analysis and interpretation of the data. This foundational perspective not only guides the research process but also influences the validity and reliability of the findings, ensuring that the study is grounded in a coherent and well-articulated philosophical context.

The nature of the study necessitates an ontology grounded in quantitative research methodologies, which include techniques such as surveys, experiments, and statistical analyses. These methods are often preferred for their ability to collect and analyse data objectively. In this context, ontology places a higher value on empirical evidence rather than theoretical conjecture. From a research perspective, the positivist approach emerges as the most appropriate framework, as it emphasises the importance of obtaining empirical evidence through quantitative means.

4.3. Research design

Creswell (2018) asserts that the techniques and methods used in research are incorporated into the research design. It is a research strategy that combines specific techniques, philosophical ideas, and investigative procedures. McCombes (2021) defines research design as the overall strategy by which a researcher determines how to consistently and logically incorporate the various components of the study. The study design examines the parameters for how the researcher addressed the research questions. He argues that the researcher's preferences, convictions, and thoughts on the most effective approach and method selections for the study are taken into consideration while choosing the approach. The research in this study employed quantitative strategies, with a survey approach being the preferred method. The survey approach provides a numeric or quantitative description of a population's trends, opinions, and attitudes. It includes longitudinal and cross-sectional studies that collect data through questionnaires or structured interviews (Creswell, 2018).

4.4. Research approach

The research approach encompasses the strategies employed by researchers to link theoretical frameworks with practical insights (Mulisa, 2021). According to Buljan (2023), these research methods serve as tools for collecting data that address the specific questions posed by the study. Researchers may choose to adopt either quantitative or qualitative methods, or in some instances, a combination of both. The researcher, to conduct a comprehensive examination of the subject matter under investigation, elected to utilise a quantitative methodology. This choice enabled a systematic examination of the data, facilitating a clearer understanding of the research problem.

4.5. Research methods

Research methods, as outlined by Walliman (2017), encompass the various approaches and procedures that researchers employ to carry out their investigations. These methods serve as practical techniques that facilitate the execution of research activities, allowing for the systematic collection and analysis of data. Walliman emphasises that these techniques can be viewed as the "tools of the trade," essential for gathering information effectively. In light of this understanding, researchers have the flexibility to choose from a range of data collection strategies, including

mono-method, mixed-method, or multiple-method approaches, each offering distinct advantages depending on the research objectives and context. This diversity in methodological choices enables researchers to tailor their studies more effectively to address specific questions and enhance the robustness of their findings.

4.6. Study site

The study was carried out at the Eswatini MTN head office and the two service centres (Mbabane and Manzini). The researcher opted not to use any sampling techniques for the study due to the small size of the total population, which facilitated the direct collection of responses from all participants. Research by Eriksson and Kovalainen (2015) indicates that sample size significantly influences the accuracy of estimations, leading to the decision to utilise the entire staff for the study.

4.7. Target population

In this study, the population consisted of Eswatini MTN's permanent staff members. All participants had to have been employed by the company for a minimum of three months to be eligible for participation. The study surveyed all permanent staff members, including executive management, middle management, and lower management. The total population consisted of 254 employees, comprising 8 top management (3%), 30 middle management (12%), and 216 lower management (85%).

4.8. Sampling

Bhardwaj (2019) noted that sampling is regarded as a statistical procedure that involves selecting a sample from the population of interest to make observations and draw statistical conclusions about the population. The researcher can consider either probability sampling or non-probability sampling. The primary goal of the sampling approach is to help the researcher minimise the amount of data that must be gathered by focusing on an accurate reflection of the population. In this research, the researcher chose to engage the entire population for the study, given its population size. By focusing on the complete population, the researcher aimed to enhance the depth and richness of the findings.

4.9. Data collection methods

The research study utilised a survey methodology to gather data effectively. This survey was designed with closed-ended questions, which were adapted from prior research to ensure relevance and reliability. The questionnaire was designed to include straightforward and easily comprehensible questions, enabling respondents to understand the requirements without confusion. It was organised into four distinct sections: the first section focused on collecting demographic data from participants, the second section addressed aspects of customer value management, and the final section explored the technology related to customer value management utilised by the participants. Notably, two of these sections incorporated a five-point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (5), which facilitated a deeper understanding of participant attitudes.

Section A

The first section of the research questionnaire focuses on gathering socio-demographic information from the participants. This section is designed to collect essential data, including the participant's name, gender, age group, educational background, and industry experience.

Section B

This section aims to gather insights into the participants' perspectives on customer value management.

Section C

This section inquires about the participant's opinion on customer value management technology and poses questions based on the TOE framework, addressing inquiries related to the technological, organisational, and environmental contexts.

Questionnaire Design

The development of the questionnaire involved a systematic six-step process designed to ensure its effectiveness and reliability. This process began with the conceptualisation of the questionnaire,

where the core objectives and target audience were identified, followed by the creation of the initial draft. Subsequently, the questionnaire underwent rigorous testing to evaluate its clarity and relevance, resulting in a thorough revision based on the feedback received. After refining the content, a pilot study was conducted to assess the questionnaire's performance in a real-world setting, which provided further insights for improvement. The final revision incorporated these findings, ensuring that the instrument was both valid and reliable. To enhance the robustness of the questionnaire, a statistician conducted comprehensive validity and reliability tests, confirming its suitability for the intended research purposes.

4.10. Reliability

Reliability serves as a fundamental requirement for ensuring the integrity and quality of measurement tools, as it focuses on assessing the consistency and stability of research instruments, as noted by Chakrabarty (2020). Creswell (2018) emphasises that both reliability and validity play crucial roles in enhancing the accuracy of evaluations and assessments within research endeavours. In this context, Chakrabarty (2020) characterises reliability as a measurement that yields consistent results, thereby allowing for an evaluation of the research's accuracy, repeatability, and reproducibility. This underscores the importance of establishing reliable measurement tools, as they not only contribute to the credibility of research findings but also facilitate the replication of studies, which is essential for advancing knowledge in any academic field. Therefore, the results are reliable if consistency and repeatability have been achieved in identical situations, but under different circumstances.

In this study, the researcher evaluated the reliability of the assessment instruments by assessing the internal consistency of items from the same construct. This procedure entailed determining how closely related the various objects are in assessing the fundamental idea, ensuring that they produce consistent findings across multiple occurrences. Using statistical approaches such as Cronbach's alpha, the researcher was able to quantify the degree of correlation between the items, providing insights into the construct's reliability.

4.11. Validity

In quantitative research, validity is often defined as the extent to which a measurement tool accurately captures what it is designed to assess, thereby ensuring that the results obtained are credible (Creswell, 2018). Chakrabarty (2020) elaborates on this concept by emphasising the effectiveness of the research instrument in measuring the specific variables being investigated. In the current study, validity was established by utilising items from a previously validated questionnaire, with some questions retained in their original form. In contrast, others were reworded to better fit the research context.

To further enhance the validity of the findings, a pilot study was conducted, involving randomly selected participants from the same organisation. This preliminary phase allowed the researcher to test the instrument's effectiveness and integrity, leading to the implementation of various validity assessments, including evaluations of content validity and construct validity. These rigorous testing procedures were essential in ensuring that the measurement tool was both reliable and appropriate for the research objectives.

- Construct validity - to assess how well the measuring instrument evaluates the constructs created to be measured.
- Content validity - to assess how well the tool (questionnaire) measures all relevant variables.

4.12. Pilot of the study

The primary aim of conducting a trial phase is to identify potential practical challenges associated with the research methodology employed. This phase also serves to uncover any weaknesses or flaws within the investigative tools utilised. In light of these considerations, a pilot study was executed to assess both the feasibility of the research and the effectiveness of the measurement instruments. Data was gathered from participants and subsequently analysed, allowing for the identification of any issues that arose during the trial phase. These concerns were meticulously addressed and rectified before the initiation of the actual data collection process, ensuring that the study would proceed with a robust and reliable framework.

4.13. Data analysis

Data analysis was performed in alignment with the three main objectives of the research project. This involved systematically organising raw data to enhance the understanding of the research findings. According to Draper and Young (2021), data analysis serves two key functions: it structures data for practical application and extracts meaning from it. During the analysis phase, the data were coded and subsequently entered into software programs, such as Microsoft Excel and SPSS, for further examination. It is at this stage that the researcher identifies patterns and develops generalisations based on the data. The information collected through questionnaires was initially recorded in Microsoft Excel before being transferred to the SPSS program for further analysis. In this study, the researcher systematically categorised, manipulated, and summarised the data to effectively address the research questions. The analysis began with the application of descriptive and inferential statistics to the respondents' data, which were illustrated through frequency tables and graphical representations. Additionally, the researcher assessed the reliability of the data to ensure its consistency. Regression analysis was then conducted to evaluate the significance of the relationships between independent and dependent variables. Finally, both multiple and linear regression analyses were employed to pinpoint the factors that influence the adoption of CVM technology.

4.14. Ethical consideration

Sobacan et al. (2018) describe ethics as the code of conduct by which humans direct their ethical decisions in their behaviour and interactions with others. Research ethics are essential to be observed in any social science study. Therefore, all research involving human subjects should be regulated and approved by an ethics committee, and researchers must comply with ethical standards to ensure the dignity, well-being, and rights of the respondents.

The research endeavour adhered to all ethical standards specified by the University of KwaZulu-Natal and other relevant ethical committees to ensure that the rights of the participants were strictly upheld. Furthermore, ethical clearance was acquired from the Ethics Review Committee Office. It is a general practice for researchers to obtain a permit before gathering data. Before seeking ethical clearance, permission was obtained from Eswatini MTN, where the study occurred. The researcher

obtained permission from the respondents via a signed consent form. Lastly, the responses were kept confidential, and the data was stored in an external drive.

4.15. Limitations of the study

The study's population was a notable drawback, as it was conducted by a single operator. Due to time constraints and permission to access organisational resources, the researcher was compelled to choose a single operator rather than all three operators in the country, which may have provided a different perspective on CVM technology adoption.

4.16. Research variables measurement scale

Table 4.1 describes elements of the survey questionnaire related to the TOE framework model used in the study. These questions were organised into numerous categories based on the study model. Table 4.1 presents the research items used in the questionnaire, which asked respondents to respond on a five-point Likert scale.

Table 4.1 Research variables measurement scale

TOE Constructs	Research Variables	Measurement Scale
Technology	Complexity, Relative advantage, and Relative improvement.	<ul style="list-style-type: none"> • CVM technology is easy to use and manage. • I believe CVM technology is user-friendly. • Understanding how to use CVM technology/applications will be an easy task. • I believe that adopting CVM technology is beneficial to the business. <p>Working with CVMT is challenging; it is difficult to grasp what is happening.</p>

TOE Constructs	Research Variables	Measurement Scale
Organisational	Top Management, Strategic goal, and knowledge	<ul style="list-style-type: none"> • Top management shows a lot of interest in CVM technology. • The CVM model is essential to top management. • There are qualified and knowledgeable personnel in the organisation. • There are sufficient technology resources to implement and manage CVM in the organisation.
Enviromental	Competitive pressure, Vendor support and Relative economy	<ul style="list-style-type: none"> • Using CVM technology enables the business to gain a competitive advantage. • Market conditions are influencing the decision to adopt CVM technology. • I know that competitors already use CVM technology. • Our vendors provide technical assistance for CVM technology.
Adopt CVMT	Adoption of CVM technology	<ul style="list-style-type: none"> • To what extent are you familiar with CVM technology adoption in the mobile industry? • CVM technology improves business performance. • Should the business adopt CVM technology as a core competitive strategy? • CVM technology improves customer acquisition, retention and CEX.

4.17. Chapter summary

This chapter offered an in-depth examination of the methodologies employed for data collection, along with a thorough description of the research framework and techniques applied in the study. It outlined the systematic approach to gathering data, emphasising the creation of the research instrument and the analytical strategies employed to interpret the findings. A quantitative research design was used, involving the administration of an online survey featuring a closed-ended questionnaire to elicit participant responses. Furthermore, this chapter discusses the ethical considerations rigorously followed throughout the research process, ensuring that all participants were treated with dignity and that their privacy was safeguarded at all times.

Chapter Five: Data Analysis and Discussion

5.1 Introduction

The following section examines the analysis of quantitative data obtained from surveys conducted with the targeted respondents. It begins by addressing the response rate, followed by a thorough examination of data screening processes and the reliability of the data, which are crucial steps in preparing for the study. This is followed by a detailed evaluation of the demographic characteristics of the respondents, along with their foundational understanding of customer value management. The presentation of the data is structured to first showcase descriptive statistics, which provide a summary of the collected information. It is then complemented by inferential statistics that facilitate deeper insights and conclusions drawn from the data.

5.1.1. Response rate

Out of the 254 individuals targeted for the survey, 191 responded, resulting in a response rate of 75% and a non-response rate of 25%. This high response rate indicates strong engagement from the targeted population, which is essential for the reliability and validity of the study's findings. The significant proportion of respondents suggests that the data collected is likely to reflect the views of the broader group, enhancing the overall credibility of the research.

5.1.2. Data screening

The initial data collection was conducted using Microsoft Excel, and the data were then imported into the Statistical Package for the Social Sciences (SPSS) for further analysis. In this process, the descriptive data were systematically coded with numerical values ranging from 1 to 5. Specifically, the responses related to the Theory of Everything (TOE) were assigned codes where one represented "strongly agree" and five indicated "strongly disagree." The researcher meticulously examined the dataset for any incomplete entries or missing records, ultimately excluding these instances as they were deemed compromised; notably, this excluded data constituted less than 1% of the overall dataset. Once this cleaning process was completed, the remaining data was confirmed to be robust and ready for comprehensive analysis.

5.1.3. Reliability test

Cronbach's alpha is commonly recognised as the leading metric for evaluating the internal reliability and consistency of research data. This statistical measure has demonstrated considerable robustness over time, although its limitations are frequently highlighted in scholarly discourse. Despite its widespread use, researchers are increasingly considering alternative metrics, such as the omega coefficient and the most significant lower bounds coefficient (GLB), which may offer more refined assessments of reliability. In the current study, the reliability of the data was assessed using Cronbach's alpha, a method esteemed for its ability to measure internal consistency across a range of variables. The results, as illustrated in Table 5.1, present the aggregated alpha values for the constructs within the Technology-Organisation-Environment (TOE) framework, ranging from 0.602 to 0.821. These findings indicate a strong level of reliability, thereby bolstering the credibility of the constructs evaluated in this research.

Table 5.1 A Reliability of the TOE Constructs

TOE Constructs	Construct variables	Number of items of measurement	Number of items used	Cronbach Alpha
Technological	Relative advantage	3	2	0.715
	Complexity	3	3	0.755
	Relative improvement	4	3	0.729
Organisational	Top management	3	2	0.735
	Strategic goal	2	2	0.654
	Knowledge	2	2	0,821
Environmental	Competitive pressure	2	2	0.764
	Relatively economy	2	2	0.602
	Vendor support	3	3	0.765

5.2 Descriptive analysis

The descriptive analysis provides an in-depth examination of the dataset's attributes, playing a vital role in encapsulating the profiles of the participants involved in the research study. This analysis explores a range of demographic variables, including gender, age, educational background, and industry experience, while also evaluating the participants' familiarity and expertise regarding the research topic. This thorough understanding is essential for interpreting how these factors influence their perceptions and practices in the field.

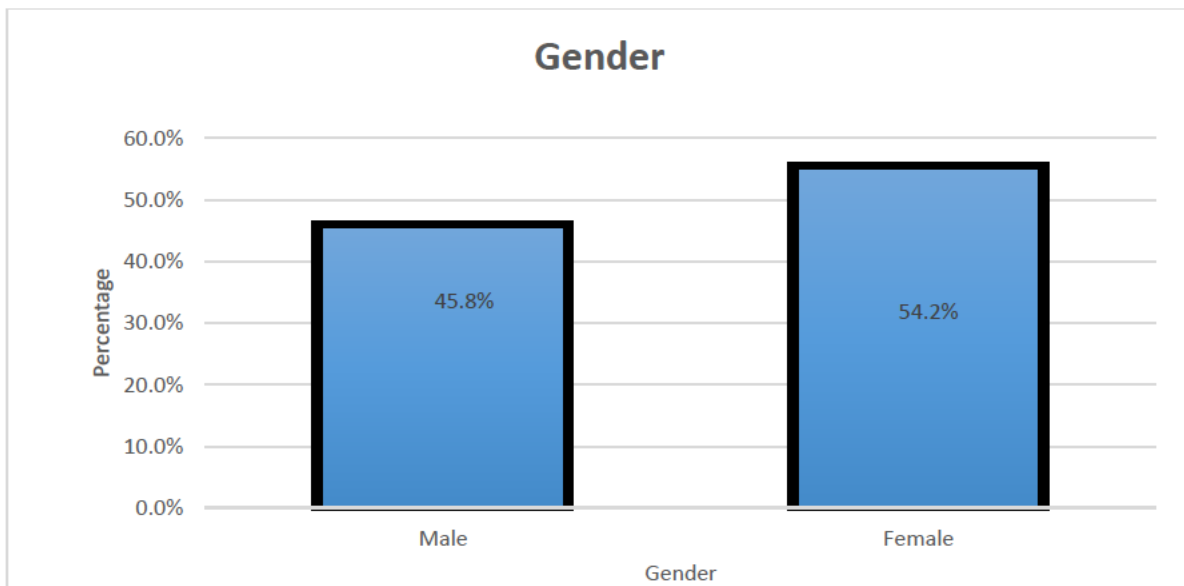
Table 5.2 Profile of respondents

		Frequency	Percentage
Gender	Male	87	45.8
	Female	103	54.2
	Total	190	100.0
Age group	18 to 24	50	26.3
	25 to 34	82	43.2
	35 to 54	54	28.4
	55 to 60	4	2.1
	Total	190	100.0
Educational level	O-level certificate	0	0.0
	Diploma	12	6.3
	Degree	163	85.8
	Above Degree	15	7.9
	Total	190	100
Industry experience	0 to 5 years	125	65.8
	6 to 10 years	57	30
	11 to 15 years	7	3.7
	16 to 20 years	1	5
	Above 21 years	0	0
	Total	190	100

5.2.1. Participant's gender

The gender distribution among the survey participants is nearly balanced, with both males and females represented in significant numbers. Specifically, 54.2% of the respondents identified as female, while 45.8% identified as male, indicating a slight predominance of women in the overall sample. However, this apparent equity in participation masks a more profound issue regarding gender representation in leadership roles. Despite the higher overall participation of women, the data indicates that managerial positions are predominantly held by men, highlighting a notable gender imbalance at the upper echelons of the organisation. This disparity suggests that while women are well-represented in the general workforce, they are underrepresented in leadership roles, raising concerns about equity and inclusivity within the organisational structure.

Figure 5.1: Gender



5.2.2. Age

The information illustrated in Table 5.2 highlights a notable demographic pattern among the survey participants, with a significant majority, specifically 43.2%, falling within the 25- to 34-year age range. This demographic not only represents the largest segment of respondents but also suggests a youthful outlook that may influence the overall findings of the study. The next largest group consists of individuals aged 35 to 54 years, who make up 28.4% of the total respondents.

This indicates a meaningful presence of middle-aged individuals, likely contributing diverse experiences and perspectives to the research. Conversely, the age category of 55 to 60 years is markedly underrepresented, with only 2.1% of respondents falling within this range.

5.2.3. Educational level

The study included individuals with a variety of academic backgrounds, each bringing unique expertise to the investigation. These questions were designed primarily to establish the respondents' greatest degree of educational qualification. According to the findings, the majority of participants (85.8%) have a bachelor's degree, with 7.9% holding honours and master's degrees. Only 6.3% of participants hold diplomas.

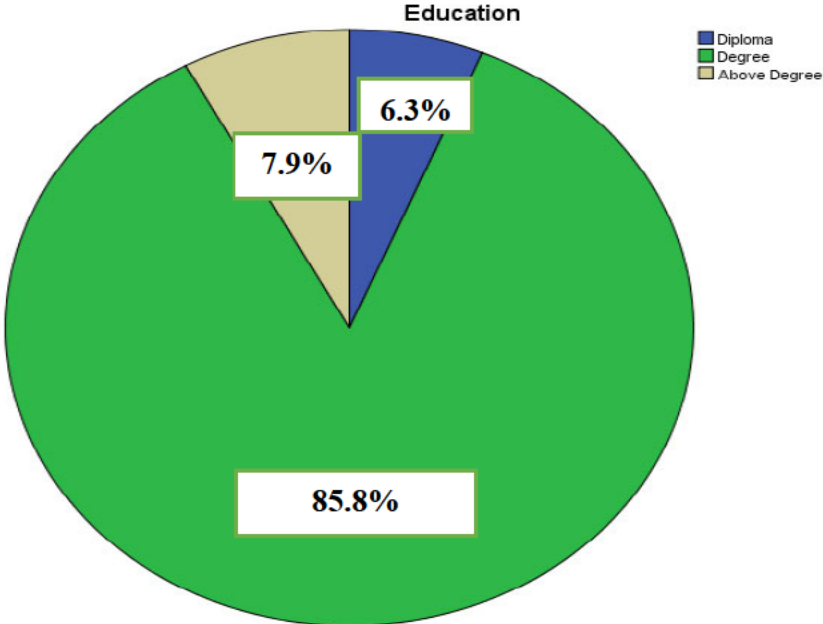


Figure 5.2: Educational level

5.2.4 Demographics by position in the company

Table 5.3 summarises the participants' characteristics.

Table 5.3 Job Titles of the participants

Title	Frequency	Percent	Cumulative Percent
Staff Member	146	76	76

Supervisor	6	3	79
Managers	17	9	88
Senior Manager	13	7	95
Executive	9	5	100
	191	100	

- 145 (76.3%) of the participants were general staff members
- 6 (3.1%) had supervisor titles
- 17 (8.9%) had manager titles
- 13 (6.8%) had the senior manager title
- 9 (4.7%) of the participants had executive titles.

The results indicate that the bulk (76.8%) of the participants were general staff members. Other participants included in the study held executive, senior manager, manager, and supervisor positions.

5.2.5 Industry experience

The study sought to establish the years the respondents had worked in the telecommunications industry. The descriptive data indicate that more than half of the participants (65.8%) have less than five years of professional experience in the mobile industry. In contrast, approximately 30% of the participants have accumulated between 6 and 10 years of experience. Following this, a mere 3.7% of the participants fall into a category of having 11 to 15 years of experience. Finally, the smallest segment, comprising only 0.5% of the participants, included individuals with 16 and 20 years of experience. Industry experience is one of the critical variables influencing knowledge, innovation, and competence required in the industry.

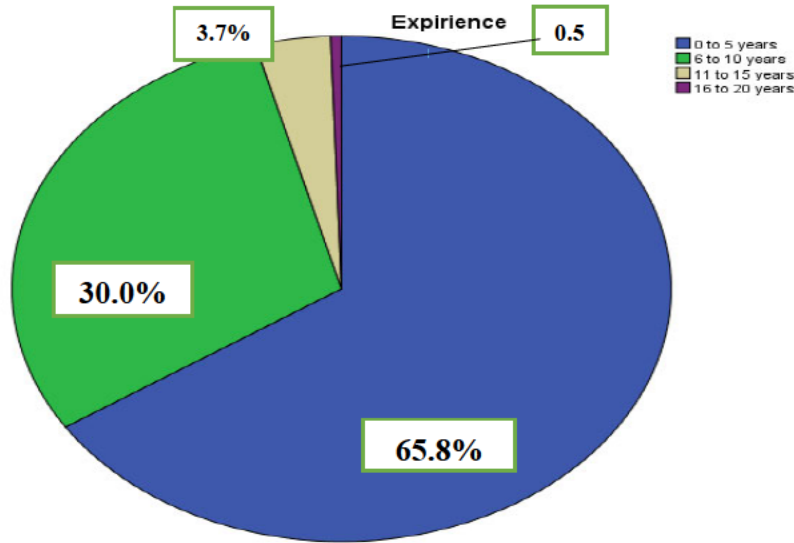


Figure 5.3: Industry experience

5.2.6 CVM knowledge

The survey results revealed that a significant portion of participants possessed varying levels of knowledge regarding customer value management (CVM). Specifically, about 37.9% of respondents demonstrated an average or some understanding of the concept, while 23.2% exhibited low or minimal knowledge. Notably, 10.5% of the participants reported having no prior familiarity with the subject. In contrast, only 28.4% of the participants showcased an excellent grasp of CVM technology, marking this group as the smallest percentage among the categories assessed. This distribution highlights a concerning gap in the comprehensive understanding of customer value management, suggesting that further educational initiatives may be necessary to enhance overall knowledge in this critical area.

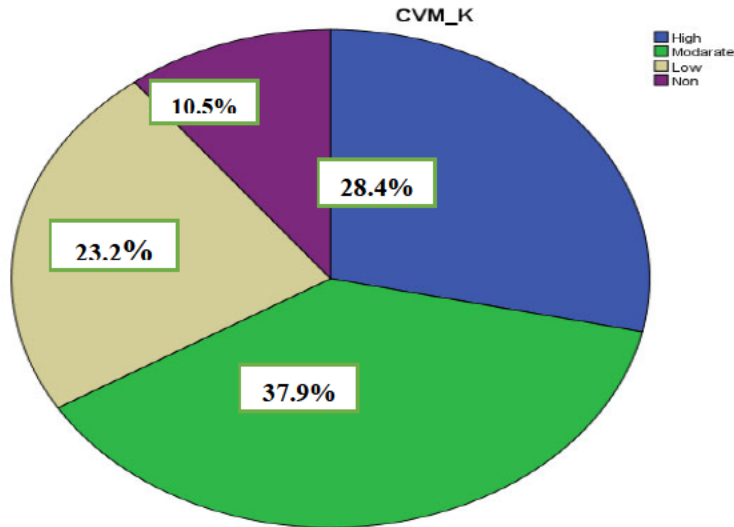


Figure 5.4: CVM knowledge

5.2.7 Opinion on CVM technology adoption

This section seeks to evaluate the level of consensus among participants regarding the adoption of Customer Value Management Technology (CVM) within the organisation. The findings reveal that a notable 71.2% of participants believe that CVM significantly contributes to enhancing business performance and should be aligned with customer-centric approaches. In comparison, only about 28.8% voiced disagreement with this perspective. Additionally, around 78% of respondents agree that the successful adoption of CVM should be supported by technological infrastructure and regarded as a core strategic competency. These results underscore that a considerable proportion of participants recognise the rationale behind the integration of CVMT. Moreover, the data suggests that the respondents' views on the tangible benefits and overall effectiveness of CVMT are pivotal to its acceptance within the organisation. In line with the Technology Acceptance Model (TAM), the perceived advantages and usefulness of the system are indicative of the extent to which individuals believe that its implementation can improve their work performance.

5.3 Inferential statistics

According to Senthilnathan (2019), correlation analysis is conducted to explore the association between two variables. Correlations ranging from ± 0.00 to ± 0.30 indicate a low correlation; ± 0.30 to ± 0.50 indicates a poor correlation; ± 0.50 to ± 0.70 indicates a reasonable correlation; ± 0.70 to ± 0.90 indicates a strong correlation; and ± 0.90 to ± 1.00 indicates a very strong connection. In this study, correlation analysis was utilised to establish the relationship between the independent and dependent variables.

The correlation analysis presented in Table 5.4 reveals a positive relationship between the independent variables, specifically the decision to adopt CVMT, and the dependent variables. All correlations are significant with a p-value < 0.01 . The most critical connection is found between the technology context and the organisation context, whereas a moderate correlation exists between the technology context and the environment context. His connection highlights the importance of incorporating technology into organisational strategies to improve efficiency and adaptability.

In contrast, the correlation between the technology context and the environment context is characterised as moderate, suggesting that while technology does play a role in shaping environmental interactions, the influence is not as robust as that seen with organisational dynamics. This distinction underscores the complexity of how technology interacts with various contexts, revealing that its impact on the environment is more nuanced and may depend on additional factors such as regulatory frameworks and societal attitudes.

Table 5.4 Correlations of TOE Framework

		Adopt_CVMT	TC_Variables	Org_Variables	Env_Variables
Adopt_CVM	Pearson Correlation	1	.471**	.349**	.322**
	Sig.(2-tailed)		.000	.000	.000
	N	190	190	190	190
TC_Variables	Pearson Correlation	.471**	1	.223**	.274**

		Adopt_CVMT	TC_Variables	Org_Variables	Env_Variables
	Sig.(2-tailed)	.000		.002	.000
	N	190	190	190	190
Org_Variables	Pearson Correlation	.349**	.223**	1	.309**
	Sig.(2-tailed)	.000	.002		.000
	N	190	190	190	190
Env_Variables	Pearson Correlation	.322**	.274**	.309**	1
	Sig.(2-tailed)	.000	.000	.000	
	N	190	190	190	190

The association between the variables was explained using regression analysis, which helped the researcher demonstrate how changes in one variable can be used to predict changes in other variables. The adopted CVMT variable seeks to determine mobile providers' intentions to implement CVM technology in Eswatini. The survey questionnaires relating to the TOE framework model were combined to form the following TC_variable, Org_variable, and Env_variable. These questions were organised into different categories based on the study model. Thereafter, multiple and linear regression analyses were performed. A regression analysis of the TOE components (technology, organisational, and environmental context) reveals a strong correlation ($p < 0.05$) among the variables.

Table 5.5 Regression analysis TOE framework

Coefficients ^a						
Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.091	.319		3.418	.001
	TC_Variables	.351	.059	.381	5.925	.000
	Org_Variables	.167	.050	.217	3.334	.001

	Env_Variable	.147	.064	.151	2.284	.023
a. Dependent Variable: Adopt_CVMT						

A multiple regression analysis was conducted to investigate the research questions, with customer value management technology serving as the dependent variable. This analytical method incorporated various independent constructs, including technological, organisational, and environmental factors that may influence the adoption of this technology. By analysing these variables, the study sought to reveal the complex relationships and influences that affect the decision-making process for organisations contemplating the implementation of customer value management systems. The results of this analysis are anticipated to yield significant insights into the dynamics of technology adoption, emphasising the essential elements organisations must consider to optimise their customer value management strategies.

The results showed that TOE variables were significant positive predictors of the adoption of customer value management technology. A further analysis was performed to examine the potential impact of the independent factors of the technology, including compatibility, relative improvement, and relative advantage, on the decision to adopt CVM technology. Table 5.6 presents the regression of the technological context on CVMT.

Table 5.6 Regression analysis technology context

Coefficients^a						
Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	Constant	2.505	.195		12.871	.000
	C	.073	.029	.169	2.549	.012
	RI	.154	.037	.284	4.121	.000
	RA	.086	.029	.205	2.955	.004
a. Dependent Variable: Adopt_CVMT						

C = Complexity

RI = Relative advantage

RA = Relative improvement

The results show that the technology construct is significantly contributing to the adoption of CVM technology. A further test was conducted to determine how the organisational independent construct, comprising variables such as top management, strategic goal, and knowledge, could influence the decision to adopt CVM technology. Table 5.7 shows the regression of the organisational context concerning CVMT.

Table 5.7 Regression Analysis Organisation Context

Coefficients^a						
Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	Constant	3.451	.230		15.004	.000
	TM	-.021	.055	-.026	-.381	.704
	SG	.44	.021	.145	2.119	.000
	K	.145	.024	.403	6.042	.000
a. Dependent Variable: Adotp_CVMT						

TM = Top Management

SG = Strategic Goal

K = Knowledge

The findings show that the organisational variables are significantly contributing to the adoption of CVM technology.

Table 5.8 details the regression analysis conducted to examine the contribution of the individual construct, environmental context, to the dependent variable: the adoption of the technology. The results show that the ecological variables significantly contribute to the adoption of CVM technology.

Table 5.8 Regression analysis environment context

Coefficients ^a						
Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	Constant	2.468	.221		11.140	.000
	CP	.127	.032	.268	4.004	.000
	VS	.112	.039	.192	2.864	.005
	RE	.099	.032	.209	3.071	.002
a. Dependent Variable: Adotp_CVMT						

CP = Competitive Pressure

VS = Vendor support

RE = Relative Economy

Further exploration of the technology context (complexity, relative advantage, and relative improvement), organisational context (strategic goal and knowledge), and environmental context (competitive pressure, vendor support, and relative economy) together shows that the regression estimates for these constructs are significant at $p < 0.05$. The finding confirms that these constructs are essential in influencing the adoption of customer value management technology, with a regression estimate of 0.00.

5.4. Discussion

5.4.1 Demographic factors

The bulk of respondents fell within the age range of 25 to 34, accounting for 43.2%. Results indicate that the majority of participants were female, comprising 54.7% of the total. Furthermore, the results also demonstrate that almost all respondents have attended college or hold a bachelor's degree as their qualification. Only approximately 8% of participants have an honours and a master's degree as their highest possible qualification.

The majority of participants possess less than five years of experience in the mobile industry, suggesting that they are relatively new to the industry, which could potentially benefit the enterprise in terms of innovation and sustainability. Newer and younger employees bring fresh perspectives and are less tied to traditional industry practices. Approximately 64% of the participants possessed an average level of knowledge or comprehension of CVM technology. This suggests that a significant portion of the group maintains a foundational grasp of the subject, which may be indicative of prior exposure or education related to the technology. Such a level of comprehension is crucial, as it lays the groundwork for further exploration and application of CVM technology in various contexts, including its potential benefits and challenges. Moreover, the moderate knowledge level among participants highlights the need for enhanced educational initiatives aimed at deepening understanding of CVM technology. This could involve targeted training programs, workshops, or information resources designed to elevate the overall comprehension of the subject matter.

5.4.2 Technology context

The technological factors are composed of three variables that may influence the decision to use CVM technology. The variables are complexity, relative advantage, and related improvements. The study's findings showed that the independent and dependent variables have a positive and statistically significant association. The analysis also found that all technological variables are correlated, and complexity (in terms of ease of use and usefulness) has been discovered to be an essential component in the decision to adopt. Apreda, Bonaccorsi, Dell'Orletta and Fantoni (2016), share the same feelings regarding complexity being a crucial factor influencing the decision to use ICT within the technology context.

Further exploration of the technological context reveals that the study's conclusion aligns with those of other researchers who have conducted similar investigations. Ali, Murray, Muhammad, Dwivedi, and Rashiti (2022) argue that organisations tend to embrace new technologies primarily when they identify a pressing need to address existing performance issues or capitalise on emerging commercial opportunities that promise relative advantage and related improvements.

5.4.3 Organisational context

The organisational context includes three variables: top management, strategic goals, and knowledge. The analysis reveals that these factors have a strong relationship and have a direct influence on the adoption process. It has been noted that strategic goals and knowledge are considered essential variables in the adoption of CVM technology. Therefore, the strategic goal can be viewed as a significant factor that impacts the decision to adopt CVM technology. It is thus easier to adopt CVM technology when the strategic direction of the organisation is clear and top management is willing to embrace new technology or innovation.

The takeaway from this section is that the strategic goal attribute is a strong predictor of the likelihood of adoption. With a regression coefficient of 0.704, it becomes evident that the influence of executives on CVMT adoption is minimal. These findings suggest that while executive leadership may play a role in various organisational initiatives, its impact on the specific adoption of CVMT is limited. The strong correlation, as indicated by the regression coefficient, highlights the importance of aligning strategic goals with the adoption process. However, Gareeb and Naicker (2015) also suggest that executive management backing is a significant influencer of adoption. The findings indicate that organisational context is influential and a determinant of CVM technology adoption. Research conducted by various scholars has revealed that the organisational context plays a pivotal role in predicting the successful adoption of CVM technology, particularly when there is strong support from executive management (Maduku et al., 2016). They further claim that the decision to adopt and implement becomes easier if top management is convinced that the technology/innovation will fit into the existing strategic goals and technology infrastructure of the organisation.

5.4.4 Environmental context

The final determinant of the TOE model is the environmental context, and the primary variables identified within this context comprise three variables. These include competitive pressure, relative economics, and vendor support, among other factors. The analysis shows that all of these variables are correlated and that they are significant organisational factors in determining CVM technology adoption. Additionally, competitive pressure has also been determined to be substantial. It is noteworthy to mention that the mobile telecommunications industry is marked by considerable

competition and innovation obstacles. Another vital aspect is vendor support. Trading partners in the mobile telecommunications industry provide technical expertise for most of the technology used in day-to-day operations. In another study by Gareeb and Naicker (2015), they found that it was not a critical factor in adopting broadband technology. However, Malak (2016) identified that the environmental context plays a crucial role in the adoption of CVMT.

5.5. Summary

The primary objective of this study was to identify the key factors that may influence the adoption of customer value management technology. The initial section provides a comprehensive overview of the demographic characteristics of the respondents, encompassing various factors such as gender, age, educational levels, position, and years of experience in the mobile industry. A descriptive analysis was conducted to gain a better understanding of the research population's composition. The descriptive analysis further shows the respondents' level of knowledge regarding customer value management and technology. Correlation and regression were conducted among the variables of the TOE theoretical framework. The findings indicate that all the TOE theoretical constructs are significant factors in the adoption of CVM technology by mobile operators in Eswatini. In general, the findings suggest that the technology and organisational contrast had the highest scores of regression and correlation, while the environmental had the lowest scores. Therefore, we can conclude that the independent factors have a significant impact on the results of the dependent variables. The next chapter will present the answer to the research questions and recommendations.

Chapter Six: Conclusion

6.1. Introduction

In light of the findings presented in the preceding chapter, this chapter provides the answers to the research questions, offers recommendations, and draws a conclusion. This study aimed to determine the level of adoption, usage, and factors influencing the adoption of CVM technology by mobile operators in Eswatini. This chapter further discusses the research's constraints and provides recommendations based on the findings. The surveys were organised into three sections, and the results were analysed according to the research questions. The investigation was conducted within one of the three mobile operators, which is the country's market leader. It is, therefore, possible to make generalisations about the entire mobile telecommunications industry in the country.

6.2. Critical research questions

What are the technological factors that influence mobile operators' adoption of CVM technology in Eswatini?

The literature suggests that the adoption of new technology is influenced by the following variables: complexity, relative advantage, and relative improvement of the proposed technology. Most researchers have explored the technological variables using the TOE framework, and they have found that these variables influence the decision to adopt technology. Similar variables were investigated in this study. Three elements comprise the technological context used in the survey: complexity, relative advantage, and relative improvement, which were derived from the TOE theory. Customer value management technology was determined to be significantly influenced by all technological aspects. The regression analysis results enabled us to draw more precise conclusions about the association between the TOE model and the adoption of CVMT. The researcher examined the associations using regression analysis and discovered that nearly all of the technological factors are correlated. The findings indicate that these variables are essential, and organisations need to recognise them when adopting CVM technology.

What are the organisational factors influencing the adoption and usage of CVM technology by mobile operators in Eswatini?

The organisational context consists of three variables: top management, strategic goals, and knowledge. Analysis suggests that these factors positively impact the decision to adopt CVM technology. The results indicate that knowledge and strategic goal intent have a favourable and significant impact on the decision to adopt CVM technology. The active involvement of top management is essential for the successful formulation of an organisation's strategic plan, as it plays a pivotal role in guiding the overall direction and priorities of the company. This support not only facilitates the alignment of the strategic objectives with the organisation's vision but also fosters an environment conducive to the effective development and training of employees. When leadership is visibly committed to the strategic planning process, it instils a sense of purpose and motivation among staff members, encouraging them to engage fully with the initiatives outlined in the plan. Furthermore, top management's endorsement is crucial for allocating the necessary resources and creating opportunities for professional development, which ultimately enhances the skills and competencies of the workforce.

What are the environmental factors that influence the adoption of CVM technology by mobile operators in Eswatini?

Recognising the environmental elements that drive the adoption of CVM technology will assist mobile operators in comprehending the measures required to influence the adoption of customer value management technology. The TOE framework guided the investigation. The environmental context encompasses competitive pressure, vendor support, and relative economic factors. The results indicate that environmental variables have a positive influence on the decision to adopt CVMT. Based on the results, it was established that all three variables had a significant impact on the decision to embrace CVM technology. Competitive pressure is considered the most important driver in the implementation of CVM technology.

How well do the technological, organisational, and environmental measures predict the adoption of CVM technology by the mobile operators in Eswatini?

In the realm of mobile telecommunications, the adoption of technology has become a pivotal factor in achieving success. As the industry becomes increasingly competitive, understanding the various elements that drive both the adoption and utilisation of new technologies is essential for mobile operators seeking to maintain an advantage. This understanding not only aids in identifying the necessary strategies to promote technology uptake but also enhances the overall user experience and satisfaction. To explore the critical determinants that influence this adoption process, the Technology-Organisation-Environment (TOE) framework has been employed. This theoretical model provides a comprehensive lens through which to analyse the interplay of technological, organisational, and environmental factors that shape the decisions of mobile operators and their customers, ultimately guiding them in their efforts to foster a more innovative and responsive telecommunications landscape.

Understanding the factors that signal the adoption of customer value management technology by mobile operators in Eswatini is crucial for both industry stakeholders and policymakers. The technology, organisational, and environmental context of the TOE model was analysed in multiple regression analyses. The study's results revealed that all the variables were found to be strongly linked to the adoption of CVM technology. In the context of technology, the variables under analysis include complexity, relative advantage, and related improvements. The results indicate that all three variables have a positive impact on the decision to adopt CVM technology. However, variables within the technology context have the highest estimated value concerning the decision to adopt, which suggests that all three factors are significant determinants of the intention to adopt.

6.3. Limitations

- ❖ The primary limitation of the study stems from its focus on a single mobile operator within the Eswatini telecommunications sector. This narrow scope restricts the generalisability of the findings, as the results may not accurately reflect the broader dynamics and competitiveness of the entire mobile industry in the country.

- ❖ Time constraints were the primary challenge, as was accessing other mobile operators. Therefore, one operator was chosen for the study.

6.4. Recommendations

In the future, it will be beneficial to extend the study to other mobile operators in the country to gain a different perspective regarding the research. Extending the study to all mobile operators in the country will help operators understand what needs to be done when considering the implementation of customer value management technologies. The findings show that technology plays an essential role in determining whether to adopt it. Therefore, mobile operators must stay up-to-date with technology, as it evolves rapidly. For Eswatini mobile operators to compete effectively at both the local and international levels, they must adapt to changing times and adopt customer value technology as a key business strategy to remain viable. As part of their growth strategy, mobile operators should invest in training and education. Additionally, mobile operators should consider external assistance as a significant factor in their decision to implement customer value technology, as it provides the necessary information.

6.5. Conclusion.

This research aimed to assess the extent to which mobile operators in Eswatini have implemented CVM technology. This study aimed to determine the extent to which mobile service providers in Eswatini have adopted Customer Value Management (CVM) technology, utilising the Technology-Organisation-Environment (TOE) framework as its theoretical foundation. To effectively address the research questions posed, the investigator identified nine critical independent variables that could potentially influence the adoption process. The research findings suggest that the TOE model is particularly effective in pinpointing the factors that affect organisations' decisions regarding the integration of new technologies. Each of the identified variables demonstrated a significant impact on the adoption of CVM technology, underscoring the multifaceted nature of this decision-making process.

Among the various factors examined, technological variables emerged as the most influential in driving the adoption of CVM technology within the mobile sector. This insight not only highlights the importance of technological considerations in strategic decision-making but also sheds light

on the current challenges faced by the mobile industry in managing its customer base effectively. By understanding these dynamics, stakeholders can better navigate the complexities of technology adoption and enhance their strategic management practices, ultimately leading to improved customer engagement and satisfaction in a rapidly evolving market landscape.

Reference

- Abed, S. S. (2020). Social commerce adoption using the TOE framework: An empirical investigation of Saudi Arabian SMEs. *International Journal of Information Management*, 53, 102118. <https://doi.org/10.1016/j.ijinfomgt.2020.102118>
- Adepoju, A. O., & Akinwale, Y. O. (2019). Factors Influencing the Willingness to Adopt Renewable Energy Technologies among Micro and Small Enterprises in Lagos State, Nigeria. DOAJ (DOAJ: Directory of Open Access Journals). <https://doi.org/10.5278/ijsepm.2019.19.7>
- Abualrob, A. A., & Kang, J. (2016). The Barriers that Hinder the Adoption of E-commerce by Small Businesses: A Unique Hindrance in Palestine. *Information Development*, 32(5), 1528–1544. <https://doi.org/10.1177/0266666915609774>
- Agiakloglou, C., & Polemis, M. (2018). Evaluating the liberalization process on Telecommunications services for EU countries. *Economics and Business Letters*, 7(3), 98–107. <https://doi.org/10.17811/ebl.7.3.2018.98-10>
- Ali, O., Murray, P. A., Muhammed, S., Dwivedi, Y. K., & Rashiti, S. (2022). Evaluating Organisational Level IT Innovation Adoption Factors among Global Firms. *Journal of Innovation & Knowledge*, 7(3), 100213. <https://doi.org/10.1016/j.jik.2022.100213>
- Alolayan, R., & Al-Kaabi, A. (2020). CRM and Mobile Applications: An Overview of Mobile CRM Adoption. *Information and Knowledge Management*. <https://doi.org/10.7176/ikm/10-2-06>
- Aprada, R., Bonaccorsi, A., Dell’Orletta, F., & Fantoni, G. (2016). Functional technology foresight. A novel methodology to identify emerging technologies. *European Journal of Futures Research*, 4(1). <https://doi.org/10.1007/s40309-016-0093-1>
- Aryani, S., Rohayati, Y., Putri, A., & Rinjany, F. (2023). Organisational Contribution to E-business Adoption for SMEs in The World. *International Journal of Innovation in Enterprise System*, 7(02), 116-133. <https://doi.org/https://doi.org/10.25124/ijies.v7i02.210>
- Awa, H., Ojiabo, O., & Emecheta, B. (2015). Integrating TAM, TPB and TOE frameworks and expanding their characteristic constructs for e-commerce adoption by SMEs. *Journal of Science and Technology Policy Management*, 6(1), 76–94. <https://doi.org/10.1108/jstpm-04-2014-0012>

- Awamleh, F., & Ertugan, A. (2021). The Relationship Between Information Technology Capabilities, Organisational Intelligence, and Competitive Advantage. *SAGE Open*, 11(2). <https://doi.org/10.1177/21582440211015201>
- Bernacki, M. L., Greene, J. A., & Crompton, H. (2019). Mobile technology, learning, and achievement: Advances in understanding and measuring the role of mobile technology in education. *Contemporary Educational Psychology*, 60, 101827. <https://doi.org/10.1016/j.cedpsych.2019.101827>
- Bhardwaj, P. (2019). Types of sampling in research. *Journal of the Practice of Cardiovascular Sciences*, 5(3), 157. https://doi.org/10.4103/jpcs.jpcs_62_19
- Bond-Smith, S. (2019). The Impact of Compatibility on Innovation in Markets with Network Effects. *Economics of Innovation and New Technology*, 28(8), 816–840. <https://doi.org/10.1080/10438599.2018.1563936>
- Boritz, J. E., Efendi, J., & Lim, J. H. (2017). The Impact of Senior Management Competencies on the Voluntary Adoption of an Innovative Technology. *Journal of Information Systems*, 32(2), 25–46. <https://doi.org/10.2308/isys-51685>
- Burns, E. (2020, July 22). In-depth guide to machine learning in the enterprise. Retrieved from SearchEnterpriseAI: https://searchenterpriseai.techtarget.com/In-depth-guide-to-machine-learning-in-the-enterprise?_ga=2.228558429.1546804351.1610202596-1658597174.1610202596
- Chakrabartty, S. N. (2020). Reliability of test battery. *Methodological Innovations*, 13(2). <https://doi.org/10.1177/2059799120918340>
- Chatterjee, S., Chaudhuri, B. R., & Dutta, D. (2018). Determinants of adoption of new technology in the Telecom sector: A Structural equation modelling approach. *Global Business Review*, 20(1), 166–178. <https://doi.org/10.1177/0972150918802534>
- Chen, L., & Aklikokou, A. K. (2020). Determinants of E-government Adoption: Testing the Mediating Effects of Perceived Usefulness and Perceived Ease of Use *International journal of Public Administration*, 43(10), 850-865. <https://doi.org/10.1080/10438599.2018.1563936>

- Chiu, H. L., Chu, H., Tsai, J. C., Liu, D., Chen, Y. R., Yang, H. L., & Chou, K. R. (2017). The effect of cognitive-based training for the healthy older people: A meta-analysis of randomized controlled trials. 12(5), 176742. <https://doi.org/10.1371/journal.pone.0176742>
- Chivandire, G., Botha, I., & Mouton, M. (2019). The Impact of Capital Structure on Mobile Telecommunication Operators in Africa. *The Journal of Private Equity*, 22(4), 96–110. <https://www.jstor.org/stable/26864439>
- Creswell, J. W. (2018). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches* (4th ed.). Thousand Oaks, CA: Sage. English Language Teaching, 12(5), 40. <https://doi.org/10.5539/elt.v12n5p40>
- Crowley, F., & Jordan, D. (2016). Does more competition increase business-level innovation? Evidence from domestically focused firms in emerging economies. *Economics of Innovation and New Technology*, 26(5), 477–488. <https://doi.org/10.1080/10438599.2016.1233627>
- Das, S., & De, K. (2023). Survival in a competitive Market: A study on mobile telecom operators in India. *Saudi Journal of Business and Management Studies*, 8(06), 124–131. <https://doi.org/10.36348/sjbms.2023.v08i06.004>
- Draper, J., Liu, Y., & Young, L. (2021). Research methods, data collection, and data analysis in meetings, expositions, events, and conventions journals. *Journal of Convention & Event Tourism*, 22(5), 429–447. <https://doi.org/10.1080/15470148.2021.1906373>
- Eggert, A., Frow, P., Payne, A., & Steinhoff, L. (2020). Understanding and managing customer value propositions: Introduction to the special issue. *Industrial Marketing Management*, 87, 242–243. <https://doi.org/10.1016/j.indmarman.2020.01.007>
- Feng, G. C., Su, X., Lin, Z., He, Y., Luo, N., & Zhang, Y. (2020). Determinants of Technology Acceptance: Two Model-Based Meta-Analytic Reviews. *Journalism & Mass Communication Quarterly*, 98(1), 83–104. <https://doi.org/10.1177/1077699020952400>
- Gao, Y. (2021). South Africa Telecom Market Analysis. *American Journal of Industrial and Business Management*, 11(11), 1113–1127. <https://doi.org/10.4236/ajibm.2021.1111067>
- Gangwar, H., Date, H. and Ramaswamy, R. (2015) Understanding Determinants of Cloud Computing Adoption Using an Integrated TAM-TOE Model. *Journal of Enterprise Information Management*, 28, 107-130. <http://dx.doi.org/10.1108/JEIM-08-2013-0065>

- Gupta, S., Kushwaha, P., Badhera, U., Chatterjee, P., & Gonzalez, E. D. S. (2023). Identification of benefits, challenges, and pathways in E-commerce industries: An integrated two-phase decision-making model. *Sustainable Operations and Computers*, 4, 200–218. <https://doi.org/10.1016/j.susoc.2023.08.005>
- Gulyaz, E., Van Der Veen, J. A., Venugopal, V., & Solaimani, S. (2019). Towards a holistic view of customer value creation in Lean: A design science approach. *Cogent Business & Management*, 6(1). <https://doi.org/10.1080/23311975.2019.1602924>
- Gheondea-Eladi, A. (2017). Health Research Ethics: Between Ethics Codes and Culture. *Journal of Empirical Research on Human Research Ethics*, 1(12), 246-260. <https://doi.org/10.1177/1556264617717162>
- Golightly, L., Chang, V., Xu, Q. A., Gao, X., & Liu, B. S. (2022). Adoption of cloud computing as innovation in the organisation. *International Journal of Engineering Business Management*, 14. <https://doi.org/10.1177/18479790221093992>
- Global System for Mobile Communication. (2021). The mobile economy. https://www.gsma.com/solutions-and-impact/connectivity-for-good/mobile-economy/wp-content/uploads/2021/07/GSMA_MobileEconomy2021_3.pdf
- Haefner, N., Parida, V., Gassmann, O., & Wincent, J. (2023). Implementing and scaling artificial intelligence: A review, framework, and research agenda. *Technological Forecasting and Social Change*, 197, 122878. <https://doi.org/10.1016/j.techfore.2023.122878>
- Handoyo, S., Suharman, H., Ghani, E. K., & Soedarsono, S. (2023). A business strategy, operational efficiency, ownership structure, and manufacturing performance: The moderating role of market uncertainty and competition intensity and its implication on open innovation. *Journal of Open Innovation Technology Market and Complexity*, 9(2), 100039. <https://doi.org/10.1016/j.joitmc.2023.100039>
- Jackson, D., & Allen, C. (2023). Enablers, Barriers, and Strategies for Adopting New Technology in Accounting. *International Journal of Accounting Information Systems*, 52, 100666. <https://doi.org/10.1016/j.accinf.2023.100666>
- Jere, J. N., & Ngidi, N. (2020). A technology, organisation and environment framework analysis of information and communication technology adoption by small and medium enterprises

- in Pietermaritzburg, South African Journal of Information Management, 22(1), 1-9. [https://doi.org/ 10.4102/sajim.22i1.116](https://doi.org/10.4102/sajim.22i1.116).
- Jeyanthi, P. M., Mansurali, A., Harish, V., & Krishnaveni, V. (2020). Conceptual Framework of Customer Value Management (CVM) in the Indian Banking Sector. *Webology*, 17(2), 971–980. <https://doi.org/10.14704/web/v17i2/web17081>
- Kilani, M. and Kobziev, V. (2016) An Overview of Research Methodology in Information Systems (IS). *Open Access Library Journal*, 3(11), 1-9. [https://doi: 10.4236/oalib.1103126](https://doi.org/10.4236/oalib.1103126)
- Kitchens, B., Dobolyi, D., Li, J., & Abbasi, A. (2018). Advanced Customer Analytics: Strategic value through integration of Relationship-Oriented Big Data. *Journal of Management Information Systems*, 35(2), 540–574. <https://doi.org/10.1080/07421222.2018.1451957>
- Kotler, P. (2017). Customer Value Management. *Journal of Creating Value*, 3(2), 170–172. <https://doi.org/10.1177/2394964317706879>
- Kucia, M., Hajduk, G., Mazurek, G., & Kotula, N. (2021). The Implementation of New Technologies in Customer Value Management—A Sustainable Development Perspective. *Sustainability*, 13(2), 469. <https://doi.org/10.3390/su13020469>
- Kumar, S., Tiwari, P., & Zymbler, M. (2019). Internet of Things is a revolutionary approach for future technology enhancement: a review. *Journal of Big Data*, 6(1). <https://doi.org/10.1186/s40537-019-0268-2>
- Kraus, S., Jones, P., Kailer, N., Weinmann, A., Chaparro-Banegas, N., & Roig-Tierno, N. (2021b). Digital Transformation: An overview of the current state of the art of research. *SAGE Open*, 11(3). <https://doi.org/10.1177/21582440211047576>
- Lemon, K. N., & Verhoef, P. C. (2016). Understanding customer experience throughout the customer journey. *Journal of Marketing*, 80(6), 69–96. <https://doi.org/10.1509/jm.15.0420>
- Lilien, G. L., and Yoon, E. (2018) 'The Timing of Competitive Market Entry: An Exploratory Study of New Industrial Products', *Management Science*, 36(5): 569-571. <http://dx.doi.org/10.1287/mnsc.36.5.568>.

- Lippert, S. K., & Govindarajulu, C. (2015). Technological, Organisational, and Environmental Antecedents to Web Services Adoption. *Communications of the IIMA*, 6(1). <https://doi.org/10.58729/1941-6687.1303>
- Lutfi A., Idris, K. M. & Mohamad, R. (2016). The Influence of Technological, Organisational and Environmental Factors on Accounting Information System Usage among Jordanian Small and Medium-sized Enterprises. *International Journal of Economics and Financial Issues*, 6, 240-248. <https://www.econjournals.com.tr/index.php/ijefi/article/view/3615>
- Maduku, D. K., Mpinganjira, M., & Duh, H. (2016). Understanding mobile marketing adoption intention by South African SMEs: A multi-perspective framework. *International Journal of Information Management*, 36(5), 711–723. <https://doi.org/10.1016/j.ijinfomgt.2016.04.018>
- Madhani, P. M. (2020). Building a customer-focused strategy: developing conceptual frameworks and research propositions. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3717410>
- Malak, Joe, (2016) An Analysis of the Technological, Organisational, and Environmental Factors Influencing Cloud Adoption. *Walden Dissertations and Doctoral Studies*. 2845. <https://scholarworks.waldenu.edu/dissertations/2845>
- Meena, M. E., & Geng, J. (2022). Dynamic Competition in Telecommunications: A Systematic Literature Review. *Sage Open*, 12(2). <https://doi.org/10.1177/21582440221094609>
- Mensah, R.O., Agyemang, F., Acquah, A., Babah, P.A & Dontoh, J. (2020). Discourses on Conceptual and Theoretical Frameworks in Research: Meaning and Implications for Researchers. *Journal of African Interdisciplinary Studies*, 4(5), 53 – 64. <https://doi.org/10.46769/jais.011972146583600143>
- Mohamed, A. (2020). The impact of customer value management on potential profits - a proposed Management Accounting framework. *International Journal of Accounting and Financial Reporting*, 10(1), 177. <https://doi.org/10.5296/ijafr.v10i1.16279>
- Mulisa, F. (2021). When does a researcher choose a quantitative, qualitative, or mixed research approach? *Interchange*, 53(1), 113–131. <https://doi.org/10.1007/s10780-021-09447>

- Nadkarni, S., & Prügl, R. (2020). Digital transformation: a review, synthesis and opportunities for future research. *Management Review Quarterly*, 71(2), 233–341. <https://doi.org/10.1007/s11301-020-00185-7>
- Nchake, M. A., & Shuaibu, M. (2022). Investment in ICT infrastructure and inclusive growth in Africa. *Scientific African*, 17, e01293. <https://doi.org/10.1016/j.sciaf.2022.e01293>
- Ozturk, H., & Karabulut, T. A. (2020). Impact of financial ratios on technology and telecommunication stock returns: evidence from an emerging market. *Investment Management and Financial Innovations*, 17(2), 76–87. [https://doi.org/10.21511/imfi.17\(2\).2020.07](https://doi.org/10.21511/imfi.17(2).2020.07)
- Parcu, P. L., Rossi, M. A., & Brennan, T. J. (2022). Innovation in 5G technology: Leadership, competition, and policy issues. *Telecommunications Policy*, 46(4), 102349. <https://doi.org/10.1016/j.telpol.2022.102349>
- Rahi, S. (2018). Research Design and Methods: A Systematic Review of Research Paradigms, Sampling Issues and Instruments Development. *International Journal of Economics and Management Sciences*, 6(2) .[http:// doi: 10.4172/2162-6359.1000403](http://doi:10.4172/2162-6359.1000403)
- Rajan, V., (2017). Innovating for sustainability: A framework for sustainable innovations and a model of sustainable innovations orientation. *Journal of the Academy of Marketing Science*, 45(1),14 – 36. <https://doi.org/10.1007/s11747-015-0461-6>
- Ramani, N., & Srinivasan, R. (2019). Effects of Liberalization on Incumbent Firms’ Marketing-Mix Responses and Performance: Evidence from a Quasi-Experiment. *Journal of Marketing*, 83(5), 97–114. <https://doi.org/10.1177/0022242919860085>
- Ridwan, S.M., (2015). Application of information and communication technology in management of information resources and services in Kaduna State Tertiary Institutions’ Libraries, Kaduna-Nigeria, *European Scientific Journal*, 1, 25–32. <https://eujournal.org/index.php/esj/article/view/5065>
- Rintamäki, T., & Saarijärvi, H. (2021). An integrative framework for managing customer value propositions. *Journal of Business Research*, 134, 754–764. <https://doi.org/10.1016/j.jbusres.2021.05.030>

- Senthilnathan, S. (2019). Usefulness of Correlation Analysis. *Political Methods: Quantitative Methods eJournal*. <http://dx.doi.org/10.2139/ssrn.3416918>
- Sobocińska, M., & Mazurek-Łopacińska, K. (2021). Applications of the Internet in Customer Value Management Processes in Poland: A Quantitative Research Perspective. *Procedia Computer Science*, 192, 4629–4638. <https://doi.org/10.1016/j.procs.2021.09.241>
- Shah, D., & Murthi, B. (2020). Marketing in a Data-Driven Digital World: Implications for the Role and Scope of *Marketing*. *Journal of Business Research*, 125, 772–779. <https://doi.org/10.1016/j.jbusres.2020.06.062>
- Sobacan, A. M., Bertotti, T., & Strom-Gottfried, K. (2018). Ethical considerations in social work research. *European Journal of Social Work*, 22(5), 805-818. <https://doi.org/10.1080/13691457.2018.1544117>
- Taherdoost, H. (2018). A review of technology acceptance and adoption models and theories. *Procedia Manufacturing*, 22, 960–967. <https://doi.org/10.1016/j.promfg.2018.03.137>
- Talukder, M., & Quazi, A. (2019). The Impact of Social Influence on Individuals' Adoption of Innovation. *Journal of Organisational Computing and Electronic Commerce*, 21(2), 111–135. <https://doi.org/10.1080/10919392.2011.564483>
- The African report. Is Nigeria ready to join Kenya and South Africa in the 5G era? (2021). <https://www.theafricareport.com/162051/is-nigeria-ready-to-join-kenya-and-south-africa-in-the-5g-era/>
- Tope-Oke, A., Afolalu, C. A., & Omofade, O. (2019). A data mining-based approach to customer behaviour in an electronic setting. *Journal of Computer and Communications*, 07(05), 42–53. <https://doi.org/10.4236/jcc.2019.75004>
- Tsoulos, G., Athanasiadou, G., Zarbouti, D., Nikitopoulos, G., Tsoulos, V., & Christopoulos, N. (2024). Empirical analysis of 5G deployments: A comparative assessment of network performance with 4 G. *AEU - International Journal of Electronics and Communications*, 186, 155479. <https://doi.org/10.1016/j.aeue.2024.155479>

- Ventosa-Santaulària, D., de México/CIDE, B., Elbittar, A., Matías, P., & Huerta, C. A. (2020). Saturation levels of mobile telecommunication market and optimal termination rates: *Estudios Económicos*, 35(2), 331–355. <https://www.jstor.org/stable/26920460>
- Walliman, N. (2017). *Research Methods: The Basics: 2nd edition (2nd ed.)*. Routledge. <https://doi.org/10.4324/9781315529011>
- Wagh, S.K., Andhale, A. A., Wagh, K. S., Pansare, J. R., Ambadekar, S. P., & Gawande, S. (2023). Customer Churn Prediction in the Telecom Sector Using Machine Learning Techniques. *Results in Control and Optimization*, 14, 100342. <https://doi.org/10.1016/j.rico.2023.100342>

Appendices

Appendix A: Statistical Description

	Mean	Median	Mode	Std. Deviation	Variance
Gender	1.54	2.00	2	.499	.249
Age	2.06	2.00	2	.796	.634
Education	3.02	3.00	3	.377	.142
Position	1.61	1.00	1	1.191	1.419
Experience	1.39	1.00	1	.587	.345
CVM_K	2.15	2.00	2	.959	.919
CVM_T	2.66	3.00	2	.997	.994

Appendix B: Model Summary for Technology Context Variables

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.467 ^a	.218	.205	.354
a. Predictors: (Constant), RA, C, RI				

Appendix C: Model Summary for Technology Context Variables

ANOVA a						
Model		Sum of squares	DF	Mean Square	F	Sig.
1	Regression	6.518	3	2.173	17.355	.000 ^b
	Residual	23.410				
	Total	29.927				
a. Dependent Variable: Adopt_CVMT						
b. Predictors: (Constant), RA, C, RI						

Appendix D: Correlations for Technology Context Variables

Correlations					
			C	RI	RA
Spearman's rho	C	Correlation Coefficient	1.000	.287**	.323**
		Sig. (2-tailed)		.000	.000
		N	191	191	191
	RI	Correlation Coefficient	.287**	1.000	.418**
		Sig. (2-tailed)	.000	.	.000
		N	191	191	191
	RA	Correlation Coefficient	.323**	.418**	1.000
		Sig. (2-tailed)	.000	.000	
		N	191	191	191
**. Correlation is significant at the 0.01 level (2-tailed).					

Appendix E: Correlations for Organisation Context Variables

Correlations					
			TM	SG	K
Spearman's rho	TM	Correlation Coefficient	1.000	.250**	.120
		Sig. (2-tailed)		.000	.000
		N	191	191	191
	SG	Correlation Coefficient	.250**	1.000	.114
		Sig. (2-tailed)	.000	.	.000
		N	191	191	191
	K	Correlation Coefficient	.120	.114	1.000

		Sig. (2-tailed)	.099	.115	
		N	191	191	191
**. Correlation is significant at the 0.01 level (2-tailed).					

Appendix F: Correlations for Environmental Context Variables

Correlations					
			CP	VS	RE
Spearman's rho	CP	Correlation Coefficient	1.000	.037	.270**
		Sig. (2-tailed)		.609	.000
		N	191	191	191
	VS	Correlation Coefficient	.037	1.000	.154*
		Sig. (2-tailed)	.609	.	.034
		N	191	191	191
	RE	Correlation Coefficient	.270**	.154*	1.000
		Sig. (2-tailed)	.000	.034	
		N	191	191	191
**. Correlation is significant at the 0.01 level (2-tailed).					

Appendix G: Questionnaire

“A Study of Customer Value Management Technology Adoption by mobile operators in Eswatini”

Introduction

This questionnaire is designed to obtain information for a study on customer value management technology adoption by mobile operators in Eswatini. Your input is essential for the reliability and precision of the research. Your personal information will be kept totally confidential, and it will only be used for this research. There are five sections in the questionnaire. Please go through and complete the questionnaire.

Section 1: General Information

Please mark the most appropriate box with an x:

1. What is your gender?

Male	Female
<input type="checkbox"/>	<input type="checkbox"/>

2. What is your age?

18 to 24	25 to 34	35 to 54	55 to 60
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. What is your education level?

O-level/certificate	Diploma	Degree	Above Degree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. What is your current role in the company?

Staff member	Supervisor	Manager	Senior Manager	Executive
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. What is your experience in the mobile industry?

0 to 5 years	6 to 10 years	11 to 15 years	16 to 20 years	Above 21 years

6. What is your level of knowledge on customer value management?

High	Moderate	Low	Non

7. What is your level of knowledge on customer value management technology?

High	Moderate	Low	Non

Section 2: Opinion on customer value management.

Please offer your thoughts on the following statements in accordance with the criteria outlined below.

customer value management	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
CVM improves business performance.					
CVM improves customer acquisition, retention & CEX.					
CVM projects should be IT oriented rather than customer focused.					
Should the business adopt CVM as a core metric/competitive strategy?					
Customer analytics/BI intelligence is critical for CVM success.					
CVM projects should be customer oriented rather than IT focused.					

Section 3: Opinion on CVM technology.

Please offer your thoughts on the following statements in accordance with the criteria outlined below.

Technology Construct	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I am of the opinion that it is a highly advantageous decision to implement CVM technology within my organisation. (Machine learning & Adaptive cognizance technology)					
Using CVM technology enables the business to gain competitive advantage.					
Using CVM technology enables the business to analyse customer data efficiently.					
CVM technology improves the business performance.					
CVM technology enhances the business to target the right customers.					
I believe CVM technology is user friendly.					
Learning how to operate CVM technology/systems will be simple effort.					
Working with CVMT is complicated, it is difficult to understand what is going on					
I know the business already use CVM technology.					

Please offer your thoughts on the following statements in accordance with the criteria outlined below.

Organisational factors	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
There are qualified and knowledgeable personnel for CVM implementation.					
There are sufficient technology resources to implement and manage CVM in the organisation.					
The CVM model is important to top management.					
Top management shows a lot of interest in CVM technology.					
I know that the competitors have already use CVM technology.					
It will be easy to integrate with the current systems.					

Please offer your thoughts on the following statements in accordance with the criteria outlined below.

Environment Construct	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Do you feel it is strategically necessary to use CVM technology to compete in the market.					
Do you believe that the company risks losing consumers to our rivals if it fails to implement CVM technology?.					
Our vendors support provides technical assistance for readiness of CVM technology services.					

Market conditions is one of the factors on which decision is to be based to invest on CVM technology.					
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Thank you for your participation

Appendix H: Gate Keep's Letter



23 /06/2022

To Whom it may concern

RE: CONSENT LETTER FOR CONDUCTING RESEARCH

This letter serves to confirm that Nathi Dlamini (208518855), a master's student at UKZN, school of Management, IT & Governance is granted consent or permission to conduct his research using our organization as one of the relevant case studies. He will have permission to interview designated officers or officials and get access ONLY to documents deemed permissible to be accessed for such purposes.

The consent is given with the understanding that it can be revoked at any time.

Kind Regards,

[Redacted Signature]

Chief Marketing office

[Redacted Signature]

27.6.2022

Head of HR

Swazi MTN Limited t/a MTN Eswatini

Head Office: Mahlakhekhwini House, cnr MR103 & Nshakabiyi Road, Ezulwini
P.O. Box 5050 Mbabane, M100
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Reg No. 407/1998 VAT No. 100106858

Directors: David Dlamini (Chairman), Wendile Mthethi (CEO), Simgangiso Mamba, Obed Hlongwane, Nompumelelo Dlamini, Karabo Nondumo, Mpendulo Mazibuka.

Appendix I : Ethical Clearance Letter



20 February 2023

Nathi Emmanuel Dlamini (208518855)
School Of Man Info Tech & Gov
Westville Campus

Dear NE Dlamini,

Protocol reference number: HSSREC/00005179/2023

Project title: A study of customer value management technology adoption by mobile operators in eSwatini.

Degree: Masters

Approval Notification – Expedited Application

This letter serves to notify you that your application received on 23 December 2022 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. **PLEASE NOTE:** Research data should be securely stored in the discipline/department for a period of 5 years.

This approval is valid until 20 February 2024.

To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 - 3 months before the expiry date. A close-out report to be submitted when study is finished.

HSSREC is registered with the South African National Health Research Ethics Council (REC-040414-040).

Yours sincerely,



Professor Dipane Hlalele (Chair)

/dd

Humanities and Social Sciences Research Ethics Committee

Postal Address: Private Bag X54001, Durban, 4000, South Africa

Telephone: +27 (0)31 260 8350/4557/3587 Email: hosrec@ukzn.ac.za Website: <http://research.ukzn.ac.za/Research-Ethics>

Founding Campuses:  Edgewood  Howard College  Medical School  Pietermaritzburg  Westville

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