

The impact of the use of e-Commerce on customer experience for retail in South Africa

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KEYWORDS

Advanced use

Basic use

Customer experience

Delone and Mclean IS Success Model

e-Commerce systems

Electronic Commerce (E-Commerce)

End users

Information quality

Service quality

System quality

DECLARATION

I, Jaroshen Naidoo, affirm that this research report represents my original work, with any contributions from external sources duly credited in the references and acknowledgements sections. This report is part of the fulfilment criteria for the degree of Master of Management in Digital Business at the esteemed University of the Witwatersrand, Johannesburg. I confirm that this work has not been previously submitted for evaluation or accreditation in any academic institution.

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Signature: 

Signed at Midrand, Johannesburg, South Africa

On the 29th day of February 2024

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ABSTRACT

e-Commerce systems are rapidly changing how individuals shop, and they have provided many retail stores in South Africa with a new sales channel to service customers. With many organisations heavily investing in e-Commerce systems, the need to have end users adopting e-Commerce is vital for the success of the future of e-Commerce. Two areas that need to be examined include how customers currently use e-commerce systems and how e-Commerce use impacts customer experience.

To understand the challenges, factors influencing e-commerce usage and its impact on customer experience were investigated. This study distinguished between basic and advanced utilisation of e-commerce systems.

To understand the research objectives identified, an extended version of the Delone and Mclean IS Success model has been adapted to the study, which has been modelled as an e-Commerce IS success model. The factors influencing the advanced use of e-Commerce systems include information, system, and service quality. With e-Commerce being split into basic and advanced use, advanced use was focused on understanding how it affects customer experience. This data was collected through a survey distributed to end users of e-Commerce over LinkedIn. 159 respondents(n=159) provided insights into the factors, which included Information quality, system quality, service quality, basic use, advanced use, user satisfaction, customer experience and data quality. However, data quality was a factor that dropped during the Structural Equation Modelling (SEM), which was done through SPSS and AMOS.

The research showed strong relationships between information quality and advanced use, system quality and advanced use, and service quality and advanced use. This confirmed the first objective of understanding the factors that impact the advanced use of e-Commerce systems in retail in South Africa. The next major result showed that advanced use had a higher coefficient to the basic

uses relationship towards customer experience, and this translated to end users wanting to make use of the advanced features of e-Commerce systems to make decision-making and Key Performance Indicators (KPI) easier to achieve.

In the findings, numerous contributions have been made, which include the factors that impact the basic and advanced use of e-Commerce systems. The effects of the basic and advanced use on customer experience and user satisfaction, which did not previously exist within the e-Commerce space, are also contributions identified in this study. Overall, this study helps organisations understand what end users and customers would want to use when using e-Commerce platforms in terms of features and how customer experience can be influenced by new technologies and features introduced into the e-Commerce system for retail in South Africa.

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LIST OF ACRONYMS

AI – Artificial intelligence

AU – Advanced Use

B2B – Business to Business

B2C – Business to Customer

BI - Business Intelligence

BU- Basic Use

CE – Customer Experience

CMS - Content Management System

CRM – Customer Relationship management

D&M – Delone and Mclean

DQ- Data Quality

E-Commerce – Electronic Commerce

EWOM – Electric Word of Mouth

ICT – Internet Communication Technologies

IQ – Information Quality

IS – Information Systems

KPI – Key Performance Indicators

ROI – Return on Investment

RO – Research Objective

RQ – Research Question

SQ- System Quality

S1Q – Service Quality

US- User Satisfaction

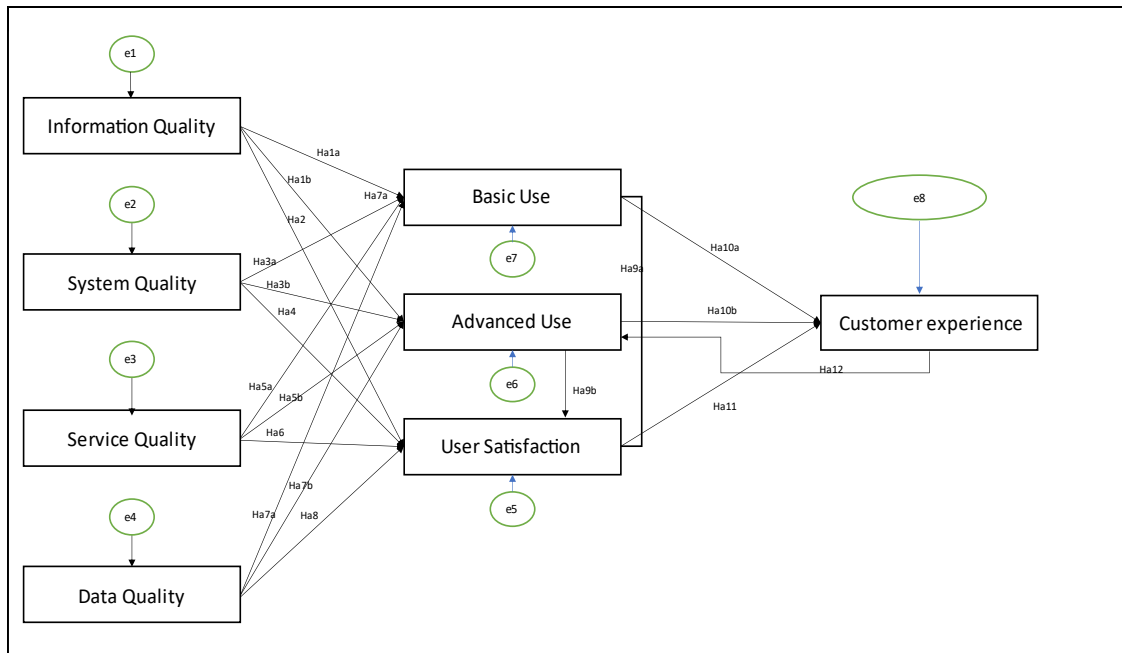
CHAPTER 1. INTRODUCTION

1.1 Statement of purpose

This study aims to investigate the factors influencing the advanced use of e-Commerce from a customer context. In addition, the study further investigates the impact of the advanced use of e-Commerce on customer experience.

To help realise this study's objectives, an adapted Delone and Mclean (D&M) information system success model is used (Markova, 2006). The D&M model has been extensively used to study the individual usage of the information system (Markova, 2006). However, the model has not distinguished between the types of use. Jeyaraj (2020), states that the benefits of IS use may depend on the type of use. The individual users who use the advanced features of the e-Commerce platform are likely to derive more benefits from e-Commerce use than those who use the basic features of the e-Commerce system. Understanding the use type helps organisations justify the investment made when implementing the e-Commerce platforms. In addition, the D&M success model identified system quality, information quality and service quality as critical attributes of information system success attributes (Jeyaraj, 2020). The success of a system such as e-Commerce may also be dependent on data quality. However, the D&M IS success model ignored data quality as an attribute of advanced use (Ojo, 2017). The inclusion of Data Quality helps in fully understanding the factors that may influence the advanced use of the e-Commerce. Figure 1 below is the conceptual framework of this study.

Figure 1 Adapted Delone and Mclean IS Success Model prepared by Researcher.



Source: Researchers Contribution

1.2 Background of the study

Electronic Commerce (e-Commerce) is a content management system (CMS) and commerce engine websites used to manage an organisation's catalogued products and services, keep track of transactions, and manage relationships between online businesses and customers (Jain et al., 2021). E-Commerce was popularised in the mid-1990s with the introduction of platforms such as Amazon, eBay, and Alibaba (Nicolas-Sans & Bustos Díaz, 2022). The term e-Commerce was discovered by the Boston Computer Exchange in 1982 due to the nature of being able to buy and sell used computers over their platform electronically (Greving, 2023). E-Commerce was introduced into the market to help businesses trade over the internet with consumers and businesses. It essentially involves the process of buying or selling products and services online for the exchange of currency or data. E-commerce offers services, including online shopping and online banking. Online shopping is one of the most significant e-Commerce services, allowing consumers to buy, order and view goods and services on

online platforms through their gadgets, anywhere they are (Ndayizigamiye et al., 2019). The reported benefits of e-Commerce include a higher level of simplicity when shopping, saving money and time, and choosing products from a wide range of products (Malloy, 2019). E-Commerce essentially allows businesses to keep a larger customer base, as the system allows them to reach customers outside their geographical area (Moriset, 2020).

Users of e-Commerce systems include marketing managers, Customers, Supply chain management and operational managers, to accomplish tasks such as expanding on customer footprint, user-friendly interfaces and expanding on products which appeal to customers, a faster buying process, affordable marketing and advertising, flexibility for customers, several payment modes and no reach limitation, shopping and comparing prices (Al-Lami and Alnoor, 2021).

Even though e-Commerce has started positively impacting organisations and individual users of the system (Molloy, 2019). Buckley (2020), argued that the benefits of implementing an e-Commerce system have not fully been realised and understood. They argue that the features available to the users are not fully understood, resulting in users of the systems not knowing how to use all the capabilities the system offers. Hajri et al (2014) argue that for a system benefit to be fully realised, the system user needs to move from basic use of the system to more advanced use. Basic use of e-Commerce systems includes buying and selling goods and services, looking at stock availability, and making price comparisons for like-for-like items. Advanced use of e-Commerce systems is when users of e-Commerce systems start looking at the advanced features of e-Commerce, which include enabling numerous payment options, self-service options, hyper-personalisation through search engines, Artificial Intelligence (AI) powered autosuggestions of products, setting predictive price strategies, fuelling product recommendation, inventory management with sales forecasting and boosting omnichannel commerce (Turban et al, 2020). Without adopting the advanced use of e-Commerce, organisations can not fully benefit from cost

savings, time savings and operational planning the system provides (Küts, 2016). However, factors influencing the advanced use of e-Commerce and other IT systems are not fully understood (Gonzales and Wareham, 2019). Addressing this research gap is necessary to afford organizations a chance to achieve a favourable position to implement e-Commerce. otherwise, investments made on the platform could be difficult to justify.

Other studies (Wymer and Regan, 2007; Kabango and Asa, 2015; AlGhamdi, Drew and Ghaith, 2017; Jusoh and Ling, 2017) investigating e-Commerce have looked at factors influencing the individual and organisational use of e-Commerce systems. However, these studies do not distinguish between basic use and advanced use of e-Commerce, and a need exists for research that looks at the factors influencing the advanced use of e-Commerce within the retail space. One function that benefits from the advanced use of e-Commerce is customers (Khalid et al., 2018). Implementing e-Commerce has been noted in helping retailers of the organisation with sales planning, advertising to end customers, sales forecasting, smoother customer journeys, reducing costs and saving time shopping (Gajewska et al., 2019). Although e-Commerce systems are marketed as online marketplaces, the functionality within the system is more diverse (Wilson and Christella, 2018). Understanding the type of e-Commerce used by individual users is a research problem that needs further investigation.

Individual studies have used the Delone and Mclean Information systems success model (D&M IS model). The Delone and Mclean model uses information, system, and service quality as inputs into the use and user satisfaction, which feeds into net benefits that an individual user can realise (Delone and Mclean, 2003). The Delone and Mclean model has been used extensively to examine information systems and has looked at the use of systems such as e-Commerce. The Delone and Mclean have been used extensively for system studies but do not distinguish between the basic and advanced use of information systems. This is a research gap in need of investigation. It is imperative to look at the basic and

advanced use of e-Commerce, as the advanced use of the system may help businesses realise additional benefits and a better ROI. In addition, data quality is to also be included, as the current model focuses on information quality and ignores data quality (Rajakani, 2022). Data quality is the data that is disposable to the organisation or the user, which helps with strategic and day-to-day decisions (Whiteley, 2000). If this factor is included, it has helped in explaining factors influencing the advanced use of e-Commerce.

Delone and Mclean IS success model has been used in numerous individual use cases, which include the Civil engineering industry (Juhriyansyah et al., 2020), Health Science (Robo et al., 2018), and the public sector (Van Cauter and Lies, 2017), where end users were not of an ICT profession but rather domain users. Therefore, the Delone and Mclean IS success model can be used for Marketing experts, IT experts and Operational managers making use of e-Commerce.

Previous literature studies show a limited understanding of the advanced use of e-Commerce and its impacts on individual users and its effects on customer experience (Wresch and Fraser, 2023). In addition to examining the advanced use of e-commerce, this study also looked at the consequences of the advanced use of e-commerce, and its influence on customer experience (Mudau, 2021). The advanced use of e-Commerce is expected to impact customer experience through many mechanisms, including customer footprint, customer preferences, and customer expectations. By investigating the effects and consequences, this study has help organisations implement e-Commerce to ensure customer experience is upheld in the highest manner.

1.3 Research problem

The *first problem* is to *investigate the factors influencing advanced use of e-commerce systems*. Although past studies investigated the factors influencing use of e-Commerce, these studies did not distinguish between basic and

advanced use in an e-Commerce system context (Hardilawati, 2019; Kowalczyk et al., 2003; Rajakani, 2022). Understanding factors influencing the advanced use of e-Commerce systems is a research problem that needs investigation.

Previous studies (Wixom and Watson, 2010; Hou, 2012; Popovič et al., 2012; Montero, 2019) found a good bond between IS usage and customer performance whilst other studies (e.g., Jain and Kanungo, 2005; Gorla, Somers, and Wong, 2010; Gaardboe et al., 2017; Angelina et al., 2019) found that IS usage had no impact on customer performance. Addressing whether advanced use, as opposed to basic use, is necessary may explain discrepancies in past findings. The factors of e-Commerce need to be further investigated to understand its impact on the advanced use fully.

The second problem investigates the impact of advanced use of e-Commerce on customer experience using the e-Commerce system. Organisations have embraced e-commerce to engage customers; nevertheless, customers exhibit a preference for physical stores (Pollak et al., 2021). Therefore an exploration of factors enhancing customer experience remain a research imperative. Certain elements sought by customers in e-commerce can foster a positive customer experience. Past studies looked at the use of e-Commerce platforms and how it affected organisation growth but not how they affect customer experience (Ali et al., 2017; Mohamud, 2021). Therefore, it is imperative that this research problem be studied in greater detail to understand how the use of e-Commerce platforms can impact customer experience.

1.4 Research objectives

- **RO 1:** To examine factors influencing the advanced use of e-commerce.
- **RO 2:** To Examine the extent that the advanced use of e-commerce systems has on customer experience.

This study has relied on adapting the D&M model, where RO and RO2 are adapted into an extended Delone and Mclean IS Success model, where the basic and advanced use is highlighted, and the net benefit has been replaced by customer experience.

1.5 Rationale

The study seeks to contribute in four ways: theoretically, contextually, methodologically, and practically.

First, a theoretical contribution was made by drawing on and extending the Delone and Mclean IS success model to develop an e-Commerce systems success model focused on advanced use. The advanced use of e-Commerce is added to this model, which is essential to investigate to fully understand the benefits of implementing an e-Commerce platform for businesses who want to improve customer experience. Data Quality has also been added to this study to understand how it factors the basic use and advanced use and how advanced use is more effective for organisations.

The second contribution has looked at the contextual contribution of individual users of e-commerce systems through employees or customers in the retail space in South Africa. Customers have benefitted from making use of e-Commerce as it allows customers to save time and money by being able to see a complete product catalogue online, as well as being able to take away experiences of standing in long queues and having a sense of hyper-personalisation (Turban et al., 2020). An organisation's marketing, IT, and operations teams have realised the benefits of advanced e-Commerce use by delivering on their individual KPI's faster, understanding future product strategies and stockkeeping and sales forecasting (Laudon and Traver, 2014). The organisation has benefitted from an increased customer footprint, decreased costs, and a larger customer base (Laudon and Traver, 2014).

The third contribution is the practical study, which has focused on real-life use cases for e-Commerce practitioners, specifically in the retail space and the necessary measures required to ensure the advanced use of e-Commerce is understood and implemented. The contribution has helped customers, the individual users of the system and the organisation understand how e-Commerce improve the retail customer experience through the advanced use of e-Commerce. A better shopping experience where customers must spend less time shopping and see more significant discounts for products that appeal to customers is a benefit the individual customers see. The individual user in the organisation might see the benefit of delivering on key performance indicators (KPI) a lot faster and minimising the workload through e-Commerce features. The organisations might see the benefit of reduced costs, a more significant customer footprint and numerous payment methods, which may increase sales. The main result which are investigated is the impact on customer experience.

1.6 Delimitations of the study

This study is limited to the businesses understanding of e-commerce and what e-commerce can assist with regarding customer experience in the B2C space. This study will also only look at individual users within South Africa, who make use of e-Commerce within the retail industry.

1.7 Definition of terms

E-Commerce

e-Commerce can be defined as the process of buying and selling services and products over an online platform to which customers, either in the consumer

space or the business space, have access to this online platform (Jain et al., 2021)

Customer Experience

Investigates the level of quality a customer receives from an organisation and whether it exceeds, meets, or fails to meet customer expectations (Godovykh & Tasci, 2020).

1.8 Assumptions

- An assumption made in this research study is that businesses do not understand the advanced use of e-Commerce.
- An assumption made in this research study is that all end-users have internet access to the survey regarding e-Commerce.
- An assumption made is that all businesses understand what level of digitalisation their organisation currently uses.

1.9 Chapter Outline

Chapter 1

This chapter looks at the statement of purpose, the motivation for the background of the study, and the problem statement. This chapter also focuses on the research methodology and technique selected to conduct the research. All assumptions and delimitations of the study are also listed in this chapter.

Chapter 2

This Chapter examines the literature review and theoretical frameworks that has been adapted and followed throughout the study. This chapter focused on the hypotheses formed on the adapted Delone and Mclean Model.

Chapter 3

This chapter examines the methodological approach used and describes the perspectives and topics that have influenced the research objectives; the research instrument, sampling methodology, sample size, and data collection procedure are also explained.

Chapter 4

This Chapter looks at the presentation of results and findings from each one of the research questions from 1.4.

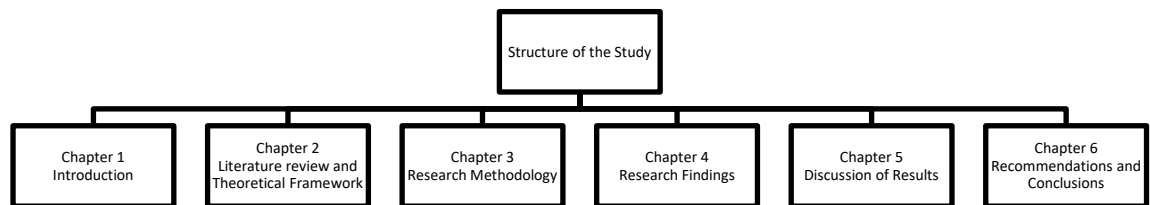
Chapter 5

This chapter looks at the discussion of the results and findings. The results and findings of Chapter 4 validate the relevance of the developed model and investigate the value advanced use of e-Commerce systems has on customer experience for retail in South Africa.

Chapter 6

This chapter looks at the conclusion and recommendations once the hypothesis or propositions formulated in Chapter 3 are validated or negated. It provides detailed recommendations around the correlation between the advanced use of e-commerce for individual users, other researchers, policymakers, and retail organisations.

Figure 2: Structure of the study



CHAPTER 2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

In Chapter 1, the research topic and the problem were introduced. This chapter reviews E-commerce as an essential offering to customers. The definition and description of e-commerce and its current organisational value, use, and customer benefit are examined. According to studies, the evolution, attributes, and benefits follow evaluation before the focus progresses to the inadequacies of e-commerce advanced use by customers. The chapter highlights gaps in data quality on e-Commerce platforms and how they negatively impact customer experience. The shortcomings of e-Commerce are also discussed, along with who the typical e-commerce customers are. The original Delone and Mclean model has been discussed, as well as the adapted model which has been used in this study.

2.2 Approach to the Literature Review

In preparation for the literature review, various online sources were used, which included the Google Scholar search engine, ResearchGate, Statista, and other online academic databases and sources. Keywords and search phrases such as e-Commerce, Delone and Mclean, optimal performance, customer experience, Data Quality and eWOM were used to ensure the review was done correctly. The identified studies included were either extracts or full-text studies of reviewed peer journals and industry-related articles, where the topics of “e-Commerce”, “Data sources”, “Delone and Mclean”, “customer experience”, “e-Commerce

Adoption”, “User Satisfaction”, “Advanced Use” and “e-Commerce Downfalls” were used.

2.3 E-Commerce Platforms

Businesses recognise the importance of having an online presence to increase and retain business and increase growth amongst customers (Paun,2020). By not implementing an online presence, many brands have been unable to communicate with customers, resulting in a lack of brand awareness (Paun,2020). Customers being unable to communicate with organisations and not fully understanding products or services negatively affects the customer experience (Patel, 2023). e-Commerce allows for communication and a better understanding of products, with customers being able to message a business and get feedback through bots that typically answer frequently asked questions, which results in a better customer experience (Potor, 2021). A basic use of e-Commerce is that it allows customers to search product catalogues, select a product or service that they are interested in, and make purchases of this product (Zande,2023). e-Commerce is a feature-rich technology that allows businesses and customers to benefit from its use (Solanki,2021). The term e-commerce was introduced to the world in 1979 by Michael Aldrich, who provided the foundation for payment mechanisms in e-Commerce (Kazinik,2021). e-Commerce was popularised between 1995 and 2003, which was seen as the first wave of e-commerce due to the rise of internet use internationally (Brainkart, 2021).

e-commerce has been defined by many as being able to sell and purchase goods through the internet (Cunningham, 2019). This is one of the basic uses of e-Commerce. However, e-Commerce can provide its users with so much more value, which includes communicating with customers, creating hyper-personalised shopping experiences, a faster response to demand and supply programs and a greater understanding of analytics through tools that interpret data(Krowicki & Maciejewski, 2024).

E-Commerce business has many operating models, which include business-to-consumer (B2C), Business to Business (B2B), Consumer to Consumer (C2C), Consumer to Business(C2B) and Business to Government(B2G) (Solanki, 2021). Each of these operating models looks at online transactions that happen and show similar benefits and features to one another, with customer experience vital to e-Commerce (Solanki, 2021).

Yeung (2022) argues that e-Commerce should be seen as more than just a tool that helps businesses grow; it should also be a tool that helps customers make the right purchasing decisions through open communication channels and personalised experiences. Managing content with e-Commerce allows businesses to offer customers a much better customer experience, which is seen as an advanced use of e-Commerce (Lawton,2019).

E-Commerce allows organisational users to reach a bigger target audience, respond faster to market demands/needs, provide numerous payment mechanisms, conduct competitor analysis, communicate easily with customers, and offer affordable marketing and advertising opportunities (Amin et al., 2016). e-Commerce unlocks many benefits for customers, which include more accessible communication channels, Flexibility to shop at any time and any place, easy-to-use technology, and faster export options for end users (Al-Lami & Alnoor, 2021).

e-Commerce and online shopping are often thought to mean the same thing, but e-Commerce is defined as running all business aspects from an online perspective, and online shopping involves buying and selling products online (Cunningham, 2019).

E-Commerce can be seen as a platform which includes the following components: Customers, Web servers, Customer Relationship Management (CRM), Enterprise Resource Planning (ERP), Payment systems, and Supply and after-delivery services (Dolak et al., 2009), which allows e-Commerce to allow

customers to make informed decisions about purchases, as there is intelligence built into the e-Commerce platform through these components (Dolak et al., 2009).

2.4 Evolution of E-Commerce

Businesses looking to operate at all hours of the day and wanting to attract customers regardless of location have led organisations to investigate the possibility of implementing e-Commerce (Altameem and Almakki, 2017). e-Commerce development is due to the rapid growth of technology and the spread of internet access to consumers who want to be able to shop anywhere at any time.

The first instance of e-Commerce was developed in 1979 by Michael Aldrich, who invented electronic shopping and enabled the first electronic payment (Pathak, 2019). In 1982, the world's first e-Commerce company, Boston Computer Exchanged, was established and allowed people to buy and sell old computers in an online market (Alkin, 2024). In 1992, the first e-commerce website, Book Stacks Unlimited, an online bookstore, was launched (Pathak, 2019).

In 1995, e-Commerce giants eBay and Amazon were both launched. These organisations moulded how many organisations make basic use of e-Commerce through buying and selling and understanding warehousing through sales planning (Hamilton and Moon, 2005). By 1998, PayPal exists, allowing alternative payment methods to be introduced into the e-Commerce space (Sarwar et al., 2023). In 1999, Alibaba was launched, which created the e-commerce boom in Asia, with numerous suppliers listing their verified products on the Alibaba platform, which created a sense of trust amongst customers who used the platform (Cuafano, 2023).

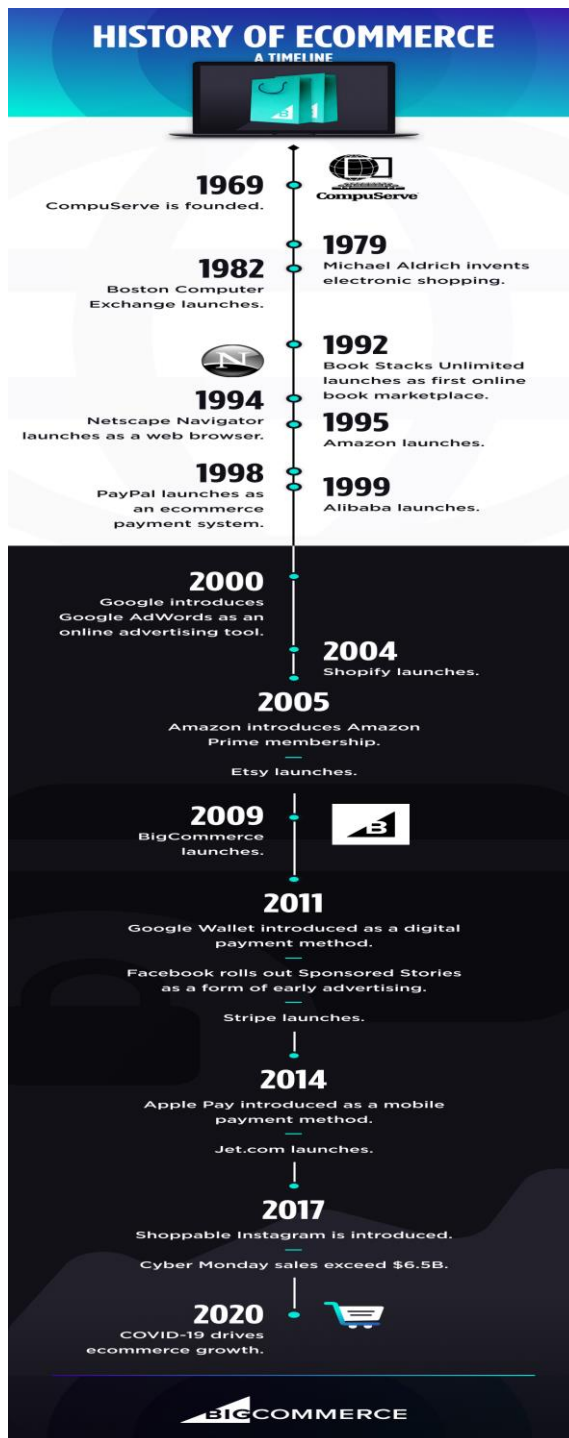
In 2000, Google introduced Google AdWords as an advertising tool, allowing businesses to target adverts to the wanted customers and filter out the customers the organisation did not want (Purnama et al., 2024). With this development, e-

Commerce can now create a sense of personalisation towards the users, which assists with customer experience. In 2011, Google Wallet was introduced to e-Commerce websites as a payment method, Facebook launched its sponsored story function, allowing for paid adverts and redirects to e-Commerce websites to be possible, and Stripe was launched as another payment mechanism for e-Commerce (Druker, 2015). These launches added considerable value to the end customer, as customers now identified certain brands to have a better online presence, which improved the communication channels between customers and businesses. In South Africa, the major e-Commerce platform, Takealot was launched by Tiger Global Investment (Claasen, 2017).

Apple pay was introduced into the e-commerce space in 2014 as a payment option for all Apple users, which was close to 442 million. This allowed customers to pay from any apple device, giving them a level of accessibility to make purchases from their smart devices (Nicholson et al., 2023). In 2017, the shoppable functionality on Instagram was introduced, allowing customers to make purchases through the social media platform, with the Algorithms of the social media platform allowing businesses to quickly find the relevant target market (Newton, 2018).

By 2020, the Covid pandemic affected the entire world, with travel restrictions and the fear of an easily transmittable virus boosting the need for e-Commerce due to its nature of not interacting with anyone to make a transaction and receive products (Gramling et al., 2021).

Figure 3 E-Commerce Evolution



Source: Big Commerce (2022)

2.5 Attributes of e-Commerce

e-Commerce is made up of numerous attributes which do not only involve e-Commerce alone but also other technologies such as Big Data, Artificial Intelligence, Machine Learning, Enterprise Resource Planning (ERP), Business Intelligence (BI), Customer Relationship Management (CRM), Chatbots and intelligent virtual agents (IVA's), e-wallet functionality, web scraping and supply chain systems (Dilmegani, 2023). These attributes enable both the basic and advanced use of e-Commerce and allow customers and individual users from the organisation to use numerous features that create a greater level of stickiness for e-Commerce.

Organisations must adopt e-Commerce platforms to meet market demands in the day-to-day business operations (Rhyn, 2023). e-Commerce Platforms, content management systems (CMS), and commerce engine websites are used to manage an organisation's catalogued products and services, track transactions, and manage relationships with online retailers and customers (Optimizely, 2023). The benefits of e-Commerce platforms are realised more than the basic use through the advanced use. E-Commerce platforms assist individuals and organisations in gaining a more significant customer footprint due to the operating model's online nature. It allows organisations to communicate with customers directly and understand customers' specific wants and needs according to the end customers' preferences.

Table 1: e-Commerce Characteristics

<u>Characteristic</u>	<u>Definition</u>
Online Presence	Having a presence on social media, through websites, online marketplaces, or platforms where

	customers and businesses can access products and services through the internet (Huang, 2024)
Global reach	Allowing businesses to expand the reach of their customer base beyond geographical boundaries (Huang, 2024)
24/7 Availability	Allowing customers to shop at any given time, allowing for better accessibility and flexibility (Huang, 2024)
Wide Variety of products and services	Offer customers an extensive range of products and services with descriptions and images where possible (Huang, 2024)
Secure Online Transactions	Secure payment mechanisms are enabled through encryption technologies and secure socket layer (SSL) certificates.
Personalisation and customisation	Customising the customer experience through data analytics and customer profiling techniques for a personalised experience (Huang, 2024)
Customer review and feedback	Allowing customers to share their experiences and impressions of products previously purchased allows future customers to make informed purchasing decisions (Huang, 2024)

Supply chain and Logistics management	To ensure timely order fulfilment and delivery is executed on an excellent customer experience (Huang, 2024)
Mobile Commerce (M-Commerce)	Mobile-optimised websites and apps which allow customers to shop using their mobile devices (Huang, 2024)
Data-Driven Insights	By leveraging data analytics, businesses can understand trends and make informed decisions on how business planning should take place and how customers would like to receive services (Huang, 2024)

2.6 Benefits of e-Commerce

Buckley and Montez (2000) argue that businesses do not see the actual value of using e-Commerce. As per Andonov, Dimitrov & Totev (2021), e-Commerce optimizes a business's performance, providing greater opportunities to gain new customers and sell additional products and services. Organisations adopting e-Commerce can see the benefit of greater efficiency within the business, which eventually results in an optimal performance, which directly influences customer experience. To understand the actual value, the basic and advanced uses for individuals and organisations need to be investigated, and the impact of customer experience is further studied.

The successful implementation of an e-Commerce platform into an organisation depends on the proper understanding of the features and benefits of the e-Commerce platform. Organisations need to inform customers about the

platform's adoption and how the platform operate in terms of what types of products and services are being sold, the type of payment options available, and the communication mechanisms built in (Andonov et al., 2021).

E-Commerce has numerous benefits for customers, which include (Malloy, 2019):

- Choose from a Wide Range of Products: Customers can choose from an array of products and services, allowing them to compare items.
- Enjoy Simplicity and Comfort: Customers can shop from any place and at any time, which gives them comfort and peace of mind, knowing they are in control of their shopping experience.
- Save Money: Customers are able to save money as the costs of shopping on the internet are lower than those of shopping in person.
- Save Time: Customers are able to shop at any time without having to get ready or leave their houses. E-Commerce makes shopping possible 24/7/365.

Get detailed information: Customers can access detailed information about the product online. The product benefits and product comparisons are available through the click of a finger (Malloy, 2019).

Organisations need to understand e-Commerce and have an e-Commerce strategy that considers product strategy, customer relationships and corporate considerations to fully recognise the benefits of e-Commerce (Qayum, 2022).

There are numerous key performance indicators (KPIs) that organisations can report on, which include the following aspects as per the below (Owens, 2021):

Table 2: Successful measures of e-Commerce

Details	Description
Conversion Rate	The number of sites visited divided by the number of transactions
Customer acquisition cost (CAC)	Some of the marketing and cost of sales divided by the amount of new customers during that specific period
Social Media Engagement	Understanding how customers interact with the organisation's social media posts
Bounce Rate	This refers to the number of customers referred from the organisation site without making purchases.
Return Rate	This refers to the number of customers who return to the e-Commerce site to make purchases.
The shopping cart abandonment rate	This refers to the number of customers who leave items in their shopping cart without making the purchase.

Net Promotor Score (NPS)	The level of customer satisfaction with using the e-Commerce platform
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The organisation might have numerous users of e-commerce who see its benefits, which include marketing teams, supply chain management, IT, and operations teams (Shettar, 2023).

2.7 Shortcomings of e-Commerce

Numerous barriers prevent organisations from seeing the value of e-Commerce platform implementations. These barriers to implementation include a lack of awareness and trust, not fully understanding the benefits, and security concerns (Chitura et al., 2008). The successful adoption of e-commerce platforms is held back by businesses not having researched the benefits of adopting e-commerce, and not fully understanding the effects on customer experience.

The shortcomings of e-Commerce can be highlighted in the table below (Bhasin, 2023):

Table 3: Shortcomings of e-Commerce

<u>Details</u>	<u>Description</u>
Security	Online portals can be hacked by cyber criminals and hackers who can make use of existing accounts.

Site Crash	e-Commerce sites stop working if there is no internet connectivity or if there are major bugs which result in the site crashing
Not being able to test products.	Customers cannot feel and look at products as shopping is done online.
Late delivery	Most deliveries tend to take longer than the promised time due to issues with the logistics.
Complexity of some products	Some items are difficult to buy online, especially items of high value such as Gold or cars.
Lack of Privacy	All customer details must be shared on the online portal before making a purchase, whereas in a brick-and-mortar shop, people shop anonymously.
Tax issues	e-Commerce is a worldwide service for many platforms such as Amazon and Alibaba, and tax implications from different countries can apply to a customer

Legal issues	There have been increased regulations in place by countries when operating an e-commerce website.
Huge technological cost	Huge technology costs for ever-changing technologies can result as a disadvantage of e-Commerce
Shipping problems	If the relevant country does not have the correct shipping infrastructure, packages can take a very long time to be delivered to customers.
Fear	Customers fear the unknown, and without dealing with a physical store or person, customers can be afraid of using e-commerce platforms.
High labour cost	Trained technical staff is required to run an efficient, high-traffic e-Commerce platform.
Severe Competition	Numerous companies typically offer similar products and services, which creates healthy competition for businesses, but it can also cause a significant loss in sales if competitive analysis is not done.

2.8 E-Commerce and Customers

E-commerce is typically used to help businesses operate online, providing businesses with the tools and technology required to run efficiently (Mckinsey, 2023). E-Commerce allows businesses to communicate with their customers regularly, even when customers are not using the e-Commerce platform, through emails, app prompts, pop-ups, and Short Message Service (SMS) (Baar, 2020). e-Commerce plays a major role in extensive organisation strategies, as it helps businesses understand customers on a personal level and helps create a stronger relationship between the organisation and customer due to the organisation understanding the customer's preferences and wants (Mckinsey, 2023).

Customers of organisations' shopping patterns are changing rapidly, especially after the COVID-19 pandemic (Tymkiw, 2022). Customers want to be able to shop at any place and at any time and expect to receive products they purchased on time. Customers expect competitive pricing and are attracted to deals that are tailor-made for them. This helps businesses increase the conversion of customers' baskets or carts (Tao et al., 2022).

Previous studies looked at how implementing e-Commerce would help with business operations (Ali et al., 2017; Al-Lami & Alnoor, 2021; Arumugam et al., 2020) and how e-Commerce affected the transport industry (Esser and Kurte, 2005). However, there is insufficient research investigating the advanced use of e-Commerce and its effect on customer experience. The investigation of e-commerce and the effect of its advanced use on customer service is thus a research problem which needs to be further investigated. The study looks at how the advanced use of e-Commerce improve customer experience. End users of e-Commerce platforms, understanding the need to adopt advanced use, allow the

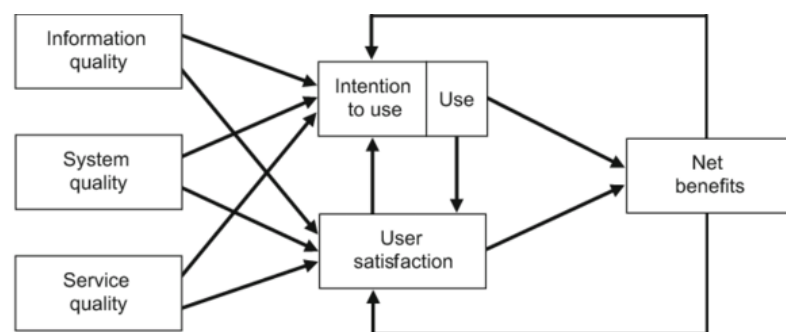
end user to realize the true benefit of streamlining tasks and making the correct decisions when using the e-Commerce system.

2.9 Delone and Mclean IS success model.

William Delone and Ephraim Mclean introduced the Delone and Mclean Success model 1993 (Delone and Mclean, 2003). This model was used to understand the success of implementing different information systems, and there have been numerous iterations and adaptations of the model over the years, which have been successfully modelled and used to understand the implementation of technology (Alotaibi and Alshahrani, 2022).

The Delone and McLean success model was adapted to this study. The elements of information quality, system quality, service quality, basic use, advanced use, user satisfaction, and net benefits. This study adds Data Quality and customer experience as part of the study. This study also adds the element of Data Quality to the contribution of e-Commerce adoption in South Africa (Delone & Mclean, 2003). Below is a basic high-level overview of the Delone and Mclean model from the researcher:

Figure 4: Delone and Mclean IS Success Model



Source (Delone and Mclean, 2003)

The Delone and McLean model looks at numerous elements as inputs, including information quality, which speaks to the quality, accuracy and relevance of information provided (Delone and Mclean, 2003). System quality is another element that forms part of the inputs and highlights performance, ease of use, security, and reliability. Service quality is another element that looks at the customer perception and satisfaction of an organisation. The last element to be reviewed is Data Quality, which shows customer data's impact on a successful implementation of e-Commerce.

All elements will impact the basic and advanced use of e-Commerce (Delone and Mclean, 2003). User satisfaction was investigated through the model, in which each element linked back to Delone and Mclean. These all-form part of the Delone and Mclean Model measures, which will eventually all form part of each outcome. Each measure links back to the outcomes investigated in this study, specifically regarding the impact of adopting e-Commerce customer experience.

Practitioners can use this study to evaluate systems, identify areas of improvement, enhance user experience, understand performance measures, and change management (Scarle et al., 2012). These elements add an important introspection into customer experience and can add immense value to the study.

The Delone and Mclean model has some identified limitations, including simplifying complex relationships, a view of long-term success, an incomplete assessment of the net benefits, and a limited focus on organisational impact (Trkman, 2009). Even with these limitations, the Delone and Mclean model serves as a sufficient model to understand the implementation of e-Commerce and its effect on customer experience.

The updated Delone and Mclean IS success model has limitations, as it does not distinguish between the basic and advanced types of use (Mudau et al., 2023). Some end users only use the basic use, which considers the basic features of an e-Commerce system, but more seasoned end users want to use the advanced

use as it provides more benefits for the end user(Purnama et al., 2024). Another shortfall in the D&M IS Success model is that data quality is not included in the model. By adding data quality, the completeness of data captured by the system are monitored, as well as the integrity of the data (Ishaya & Rigneau, 2007).

The adapted Delone and Mclean model used in this study adds Data Quality as a system attribute, and the types of use are distinguished into the basic use and the advanced use of e-commerce platforms.

2.10 Basic Use versus Advanced Use

The Delone and Mclean model only looks at use, and this can be seen as a limitation, as basic and advanced use of information systems is an investigation that needs to be conducted. Data quality is also added to influence basic and advanced use.

The use of information systems is a major factor in the success and implementation of information systems (Mudau, 2021). If an information system is not used, it does not deliver on what is expected of it (Alter, 1976). Past studies have been inconsistent in the way they look at the use of Information Systems, which include the number of times the system is used, the extent of use and self-reports on whether the individuals are extreme or partial users (Bourgeois and Bourgeois 2014). These concepts have been regarded as too simplistic and need to be revisited, as there is a lack of knowledge regarding system utilization.

Researchers must relook at conceptualization and usage behaviour to assess the complexity better and understand its impact on an individual use case (Burton-Jones and Straub, 2006). Burton-Jones and Straub (2006) and Mudau (2021) mention that the user, the system, and the task should describe system use. The user refers to the individual using the applicable system, while the system is the information system used (Mudau, 2021). In this study, customers are seen as the users, and e-Commerce is the system being investigated.

Burton-Jones and Straub (2006) explained further in their study that the types of use can be distinguished as Routine use, which looks at the basic use of the system and innovative use, which looks at the more advanced use of a system. This study used basic use to refer to routine use, and advanced use refer to innovative use.

In the context of e-Commerce, the below table list the basic use and advanced uses:

Table 4: Basic use and advanced use of e-Commerce

<u>Basic Use</u>	<u>Advanced Use</u>
Buying of Goods	Sales Planning to understand how to determine future supply and demand
Selling of Goods	Product forecasting is used to deal with suppliers and have sufficient stock.
Stock Availability at numerous branches.	Hyper-Personalization, which focuses on providing a tailor-made experience
Price Comparisons against other like-for-like items.	Omnichannel Adoption looks at integrating online and offline sales channels seamlessly.
	Voice Search and Zero User Interface (UI) where customers can voice search and order products without

	looking at a device. Orders happening through Amazon Alexa are an example.
	Augmented and Virtual Reality integration give customers an immersive experience regarding the product being browsed and purchased.
	Blockchain integration allow for more secure payment options.
	User-generated content that customers can share allows for more informed decisions on products and services.
	Electronic Word of Mouth (e-WOMs) is where customers can review, recommend, and rate the product or service received.

By looking at just the basic use of e-Commerce, users do not see the actual benefits of the system, as it does not consider other enabling technologies such as Artificial Intelligence, Big Data and Machine Learning as examples (Nair, 2023). For individual users to truly understand the benefits of e-Commerce, the advanced use of e-Commerce needs to be investigated, with the use of the system needing to be consistent over a period to build a relevant profile for a customer (Patel, 2020). For e-Commerce to be fully realized, more advanced use

should be promoted than basic use, so individual users get the total value out of the system (Mudau, 2021).

Delone and Mclean's (1992) IS success model has been used extensively to explain factors influencing system usage at an individual level, and the model does not distinguish between basic and advanced use (Mudau, 2021). The Delone and Mclean IS Success model identifies Information quality, system quality, service quality and user satisfaction as major factors influencing IS system use on an individual level.

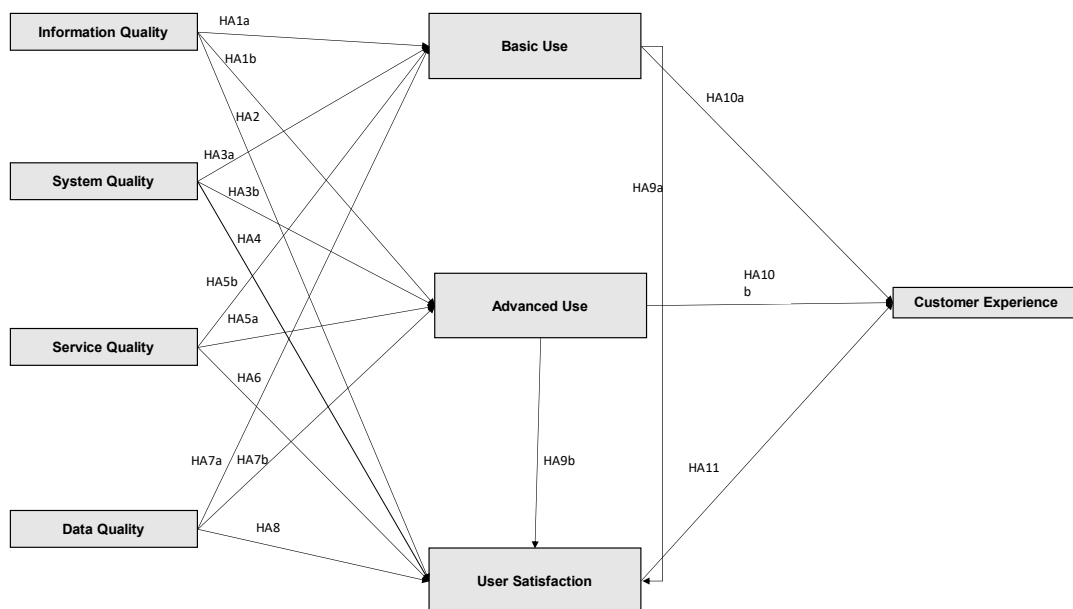
2.11 Data Quality as a system attribute/factor

Data Quality is an additional extension towards this study looking at the e-Commerce system success model. Delone and Mclean focused on system quality, including useability, availability, reliability, adaptability, portability, integration and response time, and information quality, which focuses on the content and presentation of systems outputs as they guarantee they are, among other things, valuable, pertinent, and comprehensible. Service quality is defined as the support the user receives when using the system (Mudau, 2021). Numerous articles argue that having good-quality customer data improves the use of e-commerce. Data Quality includes personal, demographic, and behavioural data (Panaitescu, 2023). Businesses must look at Data Quality when implementing e-commerce as it is a crucial enabler of the advanced use for individual users. Data inputs can be found on numerous systems, including CRM systems, social media, questionnaires, marketing campaigns and mobile applications (Sharma et al., 2010). It is important to include data quality as one of the factors influencing its use, alongside system quality, service quality, and information quality. Data Quality aids in the basic and advanced use of e-commerce and user satisfaction, subsequently impacting customer experience.

2.12 Development of research model and Hypothesis

The adapted Delone and Mclean model is depicted in figure 1, which looks specifically at the e-Commerce research model. The research model looks at information quality, system quality, service quality, and Data Quality as determinants of user experience, basic use, and advanced use. That, in turn, then looks at the impact on customer experience. Through the literature, 12 hypotheses were developed to address research questions 1 and 2.

Figure 5: Adapted Delone and Mclean Model



The hypothesis linking user satisfaction and use is developed next.

2.12.1 Information Quality

Information is data that has been processed, making it meaningful for decision-making (Mudau, 2021). Information quality examines the content and format of the system's information outputs. Information outputs must be accurate, useful, relevant, complete, and understandable for planning and decision-making

(Mudau, 2021). If the information output produced by the IS system is of poor quality, then a user may not want to use the system (Mudau, 2021). With e-commerce, accurate and relevant information outputs are likely influence use and improve user satisfaction (Popovič et al., 2010; Ojo, 2017). When the e-Commerce system produces better quality information, users may be motivated to use it more innovatively to support their work (Popovič et al., 2012). Therefore, it is hypothesised that:

Ha1(a and b) perception that information quality positively impacts basic use and advanced use of e-Commerce systems by customers; however, it has a more substantial influence on the advanced use.

Ha2 Customer perception of information quality positively impact user satisfaction. By having a higher level of Information quality, end users are more satisfied with the use of the systems and may adopt the systems faster.

2.12.2 System Quality

System quality includes the characteristics of system useability, availability, reliability, availability, portability, integration, and response time (Mudau, 2021). System quality influences the system uses and user satisfaction. A user is more likely to benefit from a system that is easier to use, so it is hypothesised that:

Ha3(a and b) perception that system quality positively impacts basic use and advanced use of e-Commerce systems by customers; however, it have a stronger influence on the advanced use.

Ha4 Customer perception of system quality has a positive impact on user satisfaction.

2.12.3 Service Quality

Service quality refers to the support a user receives when using the information system (Mudau, 2021). IS support is typically provided by an organisation's service provider or internal IT teams. Service quality can be measured inter-alia through perceptions of service attributes such as tangibility, reliability, responsiveness, assurance, and empathy (Delone and McLean, 2003). With support services, users of e-Commerce may be more inclined to implement more advanced use of the system. This is even more accurate, especially if the user has tools such as self-help guides, tutorials, and chatbot facilities (Moore, 2023). If a user does not have such support and tools, end users are more likely to make basic use of the system and not explore further use, in the perception that they may break the system (Moore, 2023). This service level is likely to help users feel more satisfied using the system. Therefore, it is hypothesised that:

Ha5(a and b) perception that service quality positively impacts basic use and advanced use of e-Commerce systems by customers; however, it have a more significant influence on the advanced use.

Ha6 Customer perception of service quality has a positive impact on user satisfaction.

2.12.4 Data Quality

Data Quality speaks to the information an organisation receives about numerous aspects of the business, allowing the organisation to make informed decisions about a customer (Deshpande, 2021). Customer data is typically received from CRM, Surveys, social media, website analytics, customer feedback, transactional information, and website pixels (Deshpande, 2023). CRM and ERP tools assist businesses in obtaining additional data about the business. The typical attributes of customer data include behavioural, demographic, and personal information. Without the input of customer data, e-commerce system users would only use

the system's basic functions and not the advanced functions, which provide more value to the user (Deshpande, 2023). Therefore, it is hypothesised as:

Ha7(a and b) perception that Data Quality positively impacts a customer's basic use and advanced use of e-Commerce systems; however, it have a more significant influence on the advanced use.

Ha8 Customer perception of Data Quality has a positive impact on user satisfaction.

2.12.5 Use and User Satisfaction

The use of a system influences user satisfaction, as it directly impacts how the user can operate the system and understand its basic use and advanced use in greater detail (Kalankesh et al., 2020). If a user has a good understanding of the basic use, it allows the user to perform basic tasks and gives the user confidence in learning more about the system, thus introducing the user to advanced uses of the system (Kalankesh et al., 2020). The users have greater satisfaction if they understand the advance use of the e-commerce system; therefore, it is hypothesised:

Ha9(a and b) User satisfaction positively impacts basic and advanced use; however, impacts on advanced use is stronger than on basic use.

2.12.6 User Satisfaction, Use and Customer Experience

User satisfaction is one of the main measures to use with the Delone, and Mclean IS success model and should be an important element in evaluating the e-commerce system. If the system has a positive effect on the customer experience, the system is more likely to be used by the users, and if it has an adverse effect, users may tend to try not to use the system unless it is the only option to get a product or service (Anderson and Dickson, 2016). The continued

use of a system is determined by the satisfaction and judgement of the user (Mudau, 2021).

User satisfaction also impacts customer experience (Kalankesh, 2020). Therefore, it is hypothesised that.

HA10 (a and b) Basic Use and Advanced use have a positive impact on customer experience.

Ha11: Perceptions of user satisfaction have a positive impact on customer experience for customers.

In the context of e-Commerce systems, improving customer experience result in more advanced use of the system by the user. Therefore, the relationship between advanced use and customer experience may be seen as reciprocal. When users can find products that appeal more to them and trust the e-commerce system choices, they are more likely to use the system (Ordman, 2017). Therefore, it is hypothesised that:

2.13 Conclusion

This chapter focused on the literature review of the topic e-Commerce, which is investigated in detail to fully understand the benefits and types of use, and the types of use for the system. The Delone and Mclean model and its usefulness to this study are further investigated, and the hypothesis between factors has been established. The conceptual framework was also highlighted, with 12 hypotheses identified. Furthermore, the Mclean IS success model is not adapted to an e-Commerce IS Success model, which understands the types of use. The adapted model was established due to the shortcomings identified in this chapter.

CHAPTER 3. RESEARCH METHODOLOGY

3.1 Research approach

The research approach looks at the plan which is followed to execute the research project. The research approach that needs to be followed for this study is the quantitative research method, as the study aims to confirm a hypothesis around the advanced use of e-Commerce and its positive effects on the customer experience (Streefkerk, 2023). This study looks to quantify behaviours, attitudes, and opinions, which touches on quantitative study attributes (DeFranzo, 2023). The research questions listed in section 1.4 look at objective and deductive objectives, and the quantitative study has helped focus on these aspects (Bryson, 2012).

The study assumes only one reality where all participants have internet access and smart devices, and the information can be studied through empirical observation. This research has remained neutral and objective. The study is appropriate for this research project because it fits the description of a positivist paradigm associated with the quantitative study (Frisby, 2024).

3.2 Research design

The research design followed was a survey design that has four key characteristics which include: sampling from a population, collecting data through questionnaires or interviews, designing instruments for data collection, obtaining a high response rate (Ali, 2023). This assists the study with ensuring that a well-balanced outcome is provided by the participants, without a specific skew that could take place. Some of the advantages of survey design include:

- Relatively easy to administer.
- It can be developed in less time.

- It can be administered remotely through the internet.
- Has no geographic dependence
- A broad range of data can be collected. (Ali, 2023)

Looking at some of the advantages, the research being done in this study can be conducted across a greater geographical area, which has allowed for a greater response rate,

Some of the disadvantages of survey design include:

- Respondents may not feel encouraged to provide accurate information.
- Respondents may not give answers that see them in a negative light.
- Respondents may not be fully aware of the reasons for their answers because of a lack of memory.
- Surveys with closed-ended questions may have a lower validity rate than other types.
- Data errors due to questions and nonresponses may exist.
- Customized surveys may run the risk of certain types of errors (Ali, 2023).

3.3 Data collection methods

The survey method has allowed the researcher to collect data efficiently and cost-effectively (Holtom et al., 2022). Survey methods allow researchers to facilitate the collection of data from a greater sample size (Mudau, 2021). The surveys were administered over an online survey platform, allowing the questionnaire to be flexible and can automate and automate data input and handling (Sincero, 2012).

Data was gathered using a self-completion questionnaire and a close-ended questionnaire to ensure limited response options.

3.4 Population and sample

3.4.1 Population

Data on users (Customers) using e-commerce are needed to meet research objectives RO1 and RO2 relating to the advanced use of e-commerce on customer experience.

The researcher has access to 5000 individuals through digital platforms such as LinkedIn, Facebook, Instagram and Twitter. Making use of digital platforms allows for easier access to individuals, as prior studies (Andrade,2020) have shown the effectiveness in gathering information through digital platforms. Prior studies have used a similar sample size (Wang & Hou, 2012), with successful results to prove the argument that the study was based on.

1. Representativeness and Diversity: Previous studies recommend a sample size of approximately 10-20% of the population for surveys and studies (Krejcie and Morgan, 1970). In this case, the sample is 10%, allowing for 500 individuals to form part of the population size. The sample size is 500 individuals, who have responded in their capacity. The 500-sample size is 500 customers.
2. Resource Allocation: Most people use e-Commerce, so it would be vital that a user (Customers) of e-Commerce is provided the survey. (Ritter,2015)
3. Technological Capabilities: People use e-Commerce if there is internet and a smart device available. (Ritter, 2015).

4. Manageable Scope: While capturing the experiences of a larger number of individuals would theoretically provide a broader perspective, practical limitations like time and resources make a smaller sample size more feasible (Devaraj and Kohli, 2003).
5. Previous Studies: Research on previous studies around e-Commerce use a similar sample size (Fa'udi et al., 2021)

The choice to focus on individual users (Customers) of e-Commerce in South Africa serves multiple purposes (Ndayizigamiye et al., 2019). These users (Customers) have experience with e-Commerce and can understand the basic use and advanced use of e-Commerce and its effects on its customer experience.

The selection of 10% of users (Customers) who use e-Commerce may provide a diverse sample size for research. A sample of this size is likely including diverse organisations, including those of different sizes, scopes, and operational contexts. This diversity can enable a more comprehensive understanding of the use of e-Commerce on customer experience. At the same time, limiting the sample to 500 users (Customers) makes the study more feasible from a logistical perspective.

Lastly, focusing on the sample size of 500 users (Customers) ensures that the sample includes e-Commerce customers. These users (Customers) are more likely to have the technological capabilities to use e-Commerce in a basic and advanced manner. Their experiences, therefore, may offer valuable insights into how organisations with significant experience use e-Commerce and how it assists the business in managing customer experience.

The study has focused on the retail segment within South Africa in the B2C space, its adoption of e-Commerce, and how it has affected customer experience through the advanced and basic use of the system.

3.4.2 Sample and sampling method.

The study sample consisted of the following:

1. **Customers:** Customers of different e-Commerce platforms have been interviewed regarding e-Commerce and its effects on customer experience.

Sampling Method

The study focused on quantitative method, and the purposeful sampling technique has been implemented.

Snowballing sampling: this technique makes use of new units which are recruited by alternative units to form part of a sample (Hassan, 2024).

3.5 The research instruments

The research instrument being used was an online survey. This survey covered the components of the adapted Delone and McLean model in Figure 1. The survey was a quantitative measure, and a 7-point Likert scale has been used to ascertain an understanding from the responders.

The surveys have been responded to online, allowing respondents to answer the survey when they are comfortable in their privacy. Online surveys allow for a greater geographical reach (Stokes, 2012).

The survey is done where the first part addresses users from an e-commerce organisation, and the second part addresses customers' e-commerce experience.

Part A: Demographic information

Part B: e-Commerce Use

Part C: Customer Experience

Information Quality (IQ): An independent factor that looks at the quality of information a user has.

System Quality (SQ): Independent factor which looks at the quality of the system a user has at their disposal.

Service Quality(S1Q): Independent factor which looks at the quality of a user's service.

Data Quality (DQ): Independent factor which looks at the quality of Data Quality a user has at their disposal.

Basic Use (BU): Independent factor relies on the input of different quality factors that determine the basic use.

Advanced Use (AU): An independent factor that relies on the input of different quality factors that determine advanced use.

User Satisfaction (US): Independent factor relies on the input of different quality factors that determine user satisfaction.

Customer Experience (CE): Independent factor which has been determined how the use of e-Commerce affects the customer.

Table 5: Research instrument example

Factors	Number of items	Survey Question/statement	Literature resource
---------	-----------------	---------------------------	---------------------

Information Quality	7	Information output by the e-Commerce system is exhibited in a valid format	(DeLone and McLean, 1992, 2003).
System Quality	6	The e-Commerce system is easy to navigate	(DeLone and McLean, 1992, 2003).
Service Quality	6	My organisation's e-Commerce support team is always helpful to me	(DeLone and McLean, 1992, 2003).
Data Quality	3	Data input records in the system are always complete	(Hou, 2012; Wu, 2006).
Basic Use	8	I use the e-Commerce regularly. Over the past months, I have often used the following basic functions of e-Commerce: Buying goods	(Popovič et al., 2012; Hajri et al., 2014).
Advanced Use	3	I can use more progressive features of e-Commerce tools with only the built-in help utilities for assistance.	(Popovič et al., 2012; Hajri et al., 2014).

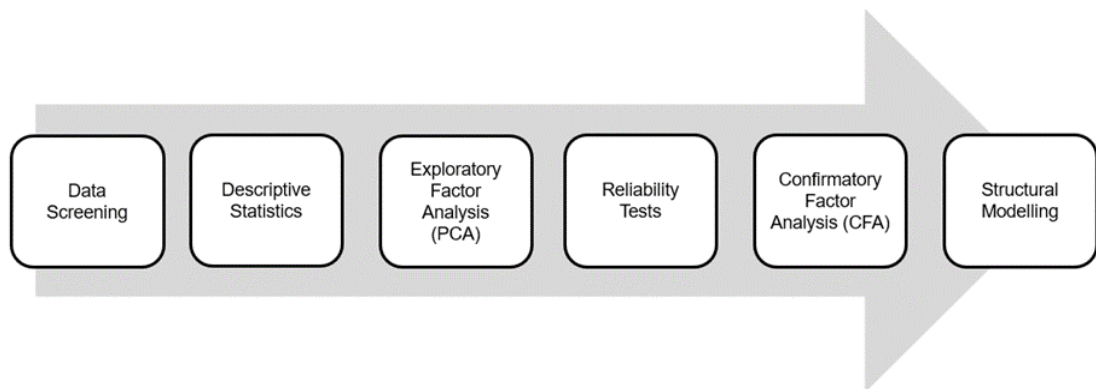
User Satisfaction	5	I enjoy using the E-commerce system	(Hou, 2012; Wu, 2006).
Customer Experience	7	Using the e-Commerce system increases my work productivity	(Hou, 2012; Igbaria and Tan, 1997).
* “All items measured on a Likert scale from 1=Strongly Disagree to Agree 7=Strongly.” ** “All items measured on a Likert scale from 1=Never to 6=Very often.”			

3.6 Procedure for data collection

Qualtrics, an online survey tool, conducted the survey. Qualtrics helped plan, distribute, collect, and summarise the research data (Sage, 2020). The researcher sent out an initial set of surveys to their LinkedIn network and WhatsApp contacts. Reminders were sent to people who had not responded. LinkedIn and WhatsApp were used to distribute the online survey.

3.7 Data analysis strategies and interpretation

Figure 6: Data analysis strategies



3.7.1 Data Screening

Data screening considers data properties that do not include the research questions but may affect the analysis of results from statistical models or may lead to updating the analysis plan (Huebner et al., 2018). It includes a methodical review of the distribution of factors and missing data. Understanding associations between factors can support decisions about modelling and later interpretation of the results.

All survey results would be screened to ensure that errors are removed, and accurate data is used.

3.7.2 Descriptive Statistics

Descriptive statistics are short informational factors that review a given data set. It consists of three basic measures, including measures of tendency, variability (spread) and frequency description. It unpacks data into smaller quantities to make understanding easier (Hayes, 2023).

Each part of the questionnaire is broken into adapted Delone and Mclean IS Success Model components.

3.7.3 Exploratory factor analysis (EFA)

Exploratory Factor Analysis is a conventional measurement model used when both observed and latent factors are measured at the interval level. EFA considers that the factors are first standardized (mean of zero and standard deviation of 1). EFA is achieved on the correlation matrix between the items. A latent factor is referred to as a factor, and the relation between latent and observed factors is called factor loadings. Factor loadings are standardized regression weights. Since EFA is an exploratory technique, there is no expected distribution of loadings; hence, it is impossible to test statistically whether factor loadings are the same across groups. EFA is used where multiple factors are measured simultaneously (Fontaine, 2005).

EFA would be used in this study as up to 5 factors are considered when looking at basic and advanced use.

Before the hypothesis of tests utilizing the path modelling techniques (discussed further below), it is critical to carry out exploratory factor analysis (EFA) to understand the underlying factor structure of the study factors (Vonglao, 2017; Abdi, 2010). The EFA's main objective was to understand the study's factors' uni-dimensionality and underlying factor structure (Hair, Black, Babin and Anderson, 2010). EFA was carried out using "Principal Component Analysis (PCA)". "The uni-dimensionality assessment must be made first before the validity and reliability could be tested" (Mudau, 2021). However, in the "uni-dimensionality step, the items with low factors loading (less than 0.6) should be deleted, while redundant items could either be deleted or constrained".

PCA includes testing of convergent and discriminant validity. Lower-loading items were excluded to confirm convergent and discriminant validity. Validity determines whether the findings obtained through data collection provide a relevant representation of the investigated topic (Salkind, 2009). The instrument's validity ensures that the instrument used meets the requirement that the

researcher intended to measure, and that the accuracy of the concept is being measured correctly (Collis and Hussey, 2009). Furthermore, Collis and Hussey (2009) stated that a “valid instrument must cover the extent to which it provides adequate coverage of the topic under study” (Collis and Hussey, 2009).

Collis and Hussey (2009) summarised the three types of validity:

- Content validity pertains to the scale measuring what it is supposed to measure and is established with literature to guide the operationalization of factors and the use of pre-testing users of e-Commerce (Collis and Hussey, 2009).
- Face validity -this investigates the extent to which the scale is subjectively viewed while covering an aspect and purpose to measure and is established through the pilot study to identify low variation in responses and confusing items (Collis and Hussey, 2009).
- Construct validity, including both “convergent validity and discriminant validity”
 - this investigates the level at which tests claim to be measuring and was established initially using the EFA, which was discussed previously. EFA is implemented to uncover the underlining structure of a large set of factors. This initial EFA aimed to create the uni-dimensionality and underlying factor structure of the study’s factors (Hair et al., 2010). EFA investigates if items load onto their expected constructs (convergent validity) and do not load onto factors (factors) they are not intended to measure (discriminant validity) (Fornell and Larcker, 1981).

3.7.4 Reliability Tests

Reliability tests indicate the extent to which a test measures without error. It relates to test validity. Test reliability can be considered a method of accuracy measurement done without error. Reliability tests also showcase how test scores measure something that needs to be tested (Livingstone, 2018). Test validity can

be considered accuracy, the extent to which the test measures the hypothesized underlying construct. Reliability is not a constant property. It may differ and be considered as different types of reliability dependant on what is being measured (Franzen, 1989).

Reliability was brought into the study when looking at all measurements.

Reliability investigates whether the data excludes measurement error and whether the results are trustworthy (Collis and Hussey, 2009). The “reliable instrument” reduces “errors and bias when analysing findings (Petty et al., 2012), offering consistent measurement across time and the various items on an instrument” (Maxwell, 2005). A common approach in surveys when establishing reliability is an internal consistency measure. The study also adopts “internal consistency” as a measure of “reliability”, which was confirmed using “Cronbach’s alpha” and the generally accepted cut-off of 0.7 (Hair et al., 2010). Values less than that raise concerns regarding too much measurement error. The item-to-total correlations have also been reviewed from the internal consistency tests, and items with low (0.30) item-to-total “correlations” would be dropped (Mudau, 2021).

3.7.5 Confirmatory Factor Analysis and Structural Equation Modelling

The “measurement models were tested using Confirmatory Factor Analysis (CFA)” (Hair et al., 2010). CFA tests if the measures identified are consistent with the proposed models or theories (Lee and Lings, 2008). The primary function of CFA is to confirm if the factors selected measure the hypothesised model. The assessment of the measurement models through the CFA procedure allows for final confirmation of uni-dimensionality, “validity and reliability” of items measuring the constructs. The factor structure results provide a simultaneous assessment of item inter-correlations within the framework of “hypothesised

relationships” between the “independent and dependent factors” (Lucadamo and Amenta, 2014; Russolillo, 2012).

After testing for “validity and reliability”, the items dropped during tests of the measurement model were not carried through into the structural model tests (Hair et al., 2010).

3.7.6 Structural Modelling

This research looks to create the correlation of the strength of the hypothesized path relationships between study factors by using covariance-based SEM (CB-SEM). Studies such as those of Kallunki et al. (2013), Chong and Eggleton (2003), Poorundersing (2008), and Tsui (2001) that have influenced the conceptualisation of this study’s research models have all relied on the use of Likert-scale data and subjected them to statistical tests using SEM. SEM is a trusted and popular-practised statistical technique widely used to test theory in information system fields. SEM is a multivariate statistical procedure that consolidates both “multiple regression analysis and factor analysis” in testing the hypothesised model to establish causality within latent (or construct) and observed factors that form part of the model (Barrett, 2007; Sangthong, 2020). “The ability of SEM to differentiate between direct and indirect relationships between factors and analyse the relationships between latent factors without random errors differentiates SEM from other simpler, relational modelling such as multiple regression analysis” (Fan and Sivo, 2005; Russolillo, 2012).

SEM is concerned with finding that the hypothesized model does not contradict the observed (real-world) data (Sangthong, 2020). Hoe (2008) suggests that a “conceptual difference of SEM from regression analysis is that in a regression model, the independent factors are themselves correlated (multi-collinearity)”, which “influences the size of the coefficients found”. SEM enables modelled

interactions amongst these factors (Cheung and Rensvold, 2002). The structural model indicates possible causal dependencies between endogenous and exogenous factors, and the *measurement model* displays the relations between “latent factors and their indicators” (Tarka, 2018). SEM allows the methods to be identified when hypothesized casual relationships are tested between the factors on specific models. The researcher examined the path coefficients' significance as a basis to support/reject the hypotheses (Mohamad, Bin and Afthanorhan, 2014; Vonglao, 2017).

3.7.7 Parameter estimation

Maximum Likelihood Estimation (MLE) is the method that can be used to estimate the “parameters of the model given the observations, by obtaining the parameter values that maximize the likelihood of making the observations, given the parameters” (Myung, 2003). MLE can accomplish this by considering “the mean and variance as parameters and finding particular parametric values that make the observed results the most probable, given the model”.

3.7.8 Model Fit

SEM requires that a model fit of an estimated model must be examined to determine how well it models the data. The fit statistics such as “Chi-square (X²)”, “Root Mean Square of Error Approximation (RMSEA)”, “Goodness of Fit Index (GFI)”, “Adjusted Goodness of Fit Index (AGFI)”, “Comparative Fit Index (CFI)”, “Tucker-Lewis Index (TLI)”, “Normed Fit Index (NFI)”, and “Chi-square degree of freedom” were investigated to confirm the factor structure and indicated if the models and theories were acceptable or not (Barrett, 2007; Fan and Sivo, 2005).

The table below describes the different fit models.

Table 6: Model fit indices

Model Fit Criteria	Description	Acceptable Level	Source
“Goodness-of-fit (GFI)”	“The GFI is the degree of fit between the hypothesized model and the observed covariance matrix”.	0 (no fit) to 1 (perfect fit)	(Barrett, 2007)
“Normed fit index (NFI)”	“The NFI evaluates the discrepancy between the chi-squared value of the hypothesised model and the chi-squared value of the null model”.	Value must exceed 0.9	(Fan and Sivo, 2005) (Byrne, 2013)
“Comparative fit index (CFI)”	“The CFI assumes that all latent factors are uncorrelated and compares the sample covariance matrix with the null model”.	Value must exceed 0.9	(Fan and Sivo, 2005)
“Incremental fit index (IFI)”	“The IFI’s purpose is to correct the issue of parsimony and sample size related to NFI”.	Value must exceed 0.9	(Byrne, 2013) (Hoe, 2008).

“Root mean square error of approximation (RMSEA)”	“Informs how well the model, with indefinite but optimally selected parameter estimates, would fit the population’s covariance matrix.”	Value must be <0.05	(Cheung and Rensvold, 2002)
“Chi-square (χ^2 /DF)”	“To assess the magnitude of discrepancy between the sample and fitted covariance matrices”. The estimation process is dependent on the sample data.	Value must be below 3	(Cheung and Rensvold, 2002)
“Tucker-Lewis Index (TLI)”	“The TLC utilises simpler models and is known to address the issue of sample size associated with NFI”.	Value must exceed 0.9	(Hoe, 2008).
“Relative Fit Index (RFI)”	“The RFI compares the chi-square for the hypothesised model to one from a “null”, or “baseline” model”.	Value must exceed 0.9	(Byrne, 2013)

3.8 Possible limitations and challenges of the study

Limitations and challenges exist within every study, including this study. Below are some of the possible limitations and challenges to this study:

1. Sampling Bias: The sample may be inaccurate in displaying the larger population of interest, although efforts are needed for a varied and representative sample. This can happen due to a non-response bias or because people did not participate in the surveys, which restricted generalization from the study's findings. (Bryman, 2016).
2. The accuracy of the results relies on the responses of the respondents. In some instances, respondents may not fully understand questions and might not provide a completely accurate response. This could be unintentional or intentional. (Field, 2013).
3. Response Rate: A low response rate can negatively affect the validity and reliability of a study's findings.
4. Multiple regression analysis brings about multiple factors, which can bring about challenges. Assumptions around linearity, homoscedasticity, and the absence of multicollinearity need to be met; if not, they can affect the study's validity. (Field, 2009; Hair et al., 2010; Cohen., 2013).
5. Subjectivity in Interpretation: different researchers could interpret the results of a quantitative study differently, as the responses are subjective (Bryman, 2016).

Regardless of these challenges and limitations, they can be addressed through the planning and execution of the study. Constant email reminders can be sent out to increase the response rate, and anonymity and confidentiality of responses

was be reinforced through communications with the respondents. Lastly, the survey was kept as user-friendly as possible.

3.9 Quality Assurance

The Delone and Mclean Model is a trusted and well-developed model used and adapted for numerous research models for IS success (Ojo, 2017). The concepts for a quantitative model are linked and put together, but their definitions differ about the measuring device. Validity speaks to how accurate a measure is, while reliability is about its consistency. A measuring tool can be accurate even if it is not valid, but it is more likely to be accurate if it is valid, claim Sürücü and Maslakci (2020).

3.9.1 Validity

The D&M IS Success model is a repetitively used framework that has been adapted for several studies to find out the success of new system implementations (Wang and Liao, 2006). A few individuals with different jobs, backgrounds, organisations, experiences, and ways of thinking have tested this model. The questionnaire was set up to make sense in the context of an e-Commerce system. This ensures that all responders who answer the survey get the same idea from the survey. The typical components of D&M IS Success models are used, but Data Quality, basic use, advanced use, and customer experience was added to the model.

To evaluate reliability and validity, a supervisor and peers were reviewed the survey to ensure it does not have numerous errors (Wang and Liao, 2007).

A small group of individuals from the researcher's network get a draft version of the survey before it is live to ensure questions are phrased professionally and the links and survey tool work properly.

The researcher additionally worked under supervision to ensure that competence was practised.

3.9.2 Reliability

The Delone and Mclean IS Success model is a reputable model which has been used by many researchers looking at the success of internet systems within numerous industries (Wang and Liao). This model has been used for this study due to its reliability across numerous studies, especially since they have been successful. Reliability looks at whether the data is free of measurement error and whether the results are reliable. (Collis and Hussey, 2009). The “reliable instrument” reduces “errors and bias when analysing findings (Petty et al., 2012), offering consistent measurement across time and the various items on an instrument” (Maxwell, 2005). A commonly practised approach to test reliability is the internal consistency measure. The study also adopts “internal consistency” as a measure of “reliability”, which was confirmed using “Cronbach’s alpha” and the generally accepted cut-off of 0.7 (Hair et al., 2010). Values less than that raise concerns regarding too much measurement error. “The item to total correlations has also been reviewed from the internal consistency tests, and items with low (0.30) item to total “correlations” would be dropped” (Mudau, 2021). The items with lower correlations were excluded.

3.10 Ethical considerations

The researcher has applied for ethical clearance from the University of Witwatersrand to conduct this survey in an ethical manner that does not discriminate or place prejudice on an individual. The ethical clearance number is WBS/DB588283/603. The researcher has ensured that all the research captured is stored ethically and does not have any risk to the end user.

3.11 Chapter Outline and Conclusion

A quantitative research approach is utilized to delve into the behaviors of individual e-Commerce users. Insights are provided on how e-Commerce platforms are leveraged by these individuals to enhance customer experiences. The gathered insight serves as the foundation for the cross-sectional analysis aimed at evaluating the model. The organisational model is scrutinized subsequent to the distribution and response collection of surveys using cross-sectional data. Structural Equation Modeling (SEM) is employed for a thorough examination of the models. The ensuing findings of data analysis, pivotal for evaluating each distinct model, are elaborated upon in forthcoming chapters.

CHAPTER 4. Research Findings

4.1 Empirical Results

In chapter 3, the research methodology was established. Chapter 4 focuses on the empirical data captured from the quantitative surveys. The RO1 and RO2 respectively look at "To examine factors influencing the advanced use of e-commerce by individual users.". the second objective looks at: "To Examine the extent that the advanced use of e-commerce systems has on customer experience." These are both empirically tested. The results were obtained through a survey distributed to users of e-Commerce platforms. The data collected was used to test the e-commerce model, which was hypothesized to be where factors influencing the advanced use of e-Commerce needed to be understood in greater detail, as well as the impact the advanced use of e-Commerce has on customer experience. This chapter discusses the sample size, demographics of the respondents, data screening, and sample outliers.

Further, chapter 4 looks at descriptive statistics, assessment of normality and sample adequacy of the empirical data collected and investigated. In addition, the principal component analysis, reliability and validity, and correlation matrix are conducted before the results are examined. Lastly, the results of the model, discussion and conclusion are presented.

4.1.1 Sample Size

A sample size of 500 individuals was used, with 159 respondents (31,8%). There were no spoilt responses provided.

4.1.2 Demographics

Before testing the SEM model with the empirical data collected, the demographics are provided in the respondents' Table 7. All 159 respondents' useable data can be understood below.

Table 7 below indicates that most respondents have a national diploma education with 22,6%, which translates to 36 individuals. The demographics also show that a minimum number of respondents have a PhD or Other qualification with 2 and 1 individual, respectively. Grade 12/matric or master's qualification has 17% each, which translates to 27 individuals for each category. There are 31 respondents with bachelor's degrees and 35 with honours degrees.

Regarding the years individuals have used e-commerce platforms, the respondents show that 47,8% of respondents have used e-commerce platforms for less than 5 years, translating to 76 respondents. The demographics also show that the least respondents have used e-Commerce platforms for less than 16 years, with 7,5% of respondents using e-commerce for less than 16 years; this translates to 12 individuals. Users of e-commerce platforms between 5-10 years make up 34% of the respondents and who used e-commerce platforms between 11-15 years make up 10,7%.

Table 7: Demographics table

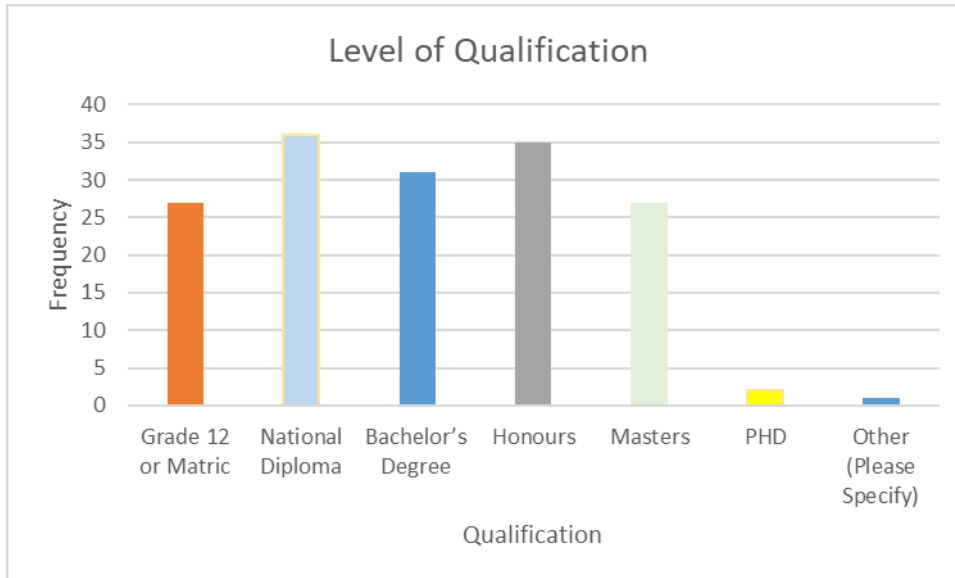
Demographics			
Demographic	Category	Frequency	Percent
	Grade 12 or Matric	27	17,0

What is your highest qualification?	National Diploma	36	22,6
	Bachelor's Degree	31	19,5
	Honours	35	22,0
	Masters	27	17,0
	PHD	2	1,3
	Other (Please Specify)	1	0,6
	Total	159	100,0
Please select the number of years you have used e-Commerce	< 5 Years	76	47,8
	6-10 Years	54	34,0
	11-15 Years	17	10,7
	>16 Years	12	7,5
	Total	159	100,0

Table 5 shows an acceptable spread of respondents concerning qualifications and years of using e-Commerce platforms. Therefore, the study can continue.

4.1.3 Description of graphs

Figure 7: Level of qualification



The data depicted in Figure 7 reveals a diverse distribution of qualifications among respondents, with 27 individuals holding a matric qualification (17%), 36 possessing a national diploma (22.6%), 31 attaining a bachelor's degree (19.5%), 35 achieving an honours degree (22%), 27 securing a master's degree (17%), 2 obtaining a PHD (1.3%), and 1 having another qualification (0.6%). Interestingly, a correlation emerges between the level of education and the propensity to utilize e-Commerce systems, with a clear trend indicating that respondents with educational achievements beyond matriculation exhibit a greater inclination towards adopting e-Commerce platforms. This phenomenon suggests that individuals with higher educational backgrounds are more adept at leveraging the intricate functionalities of e-Commerce systems, thus influencing their usage patterns and favouring advanced features due to their enhanced comprehension and familiarity with the technology.

Figure 8: Number of years using e-Commerce

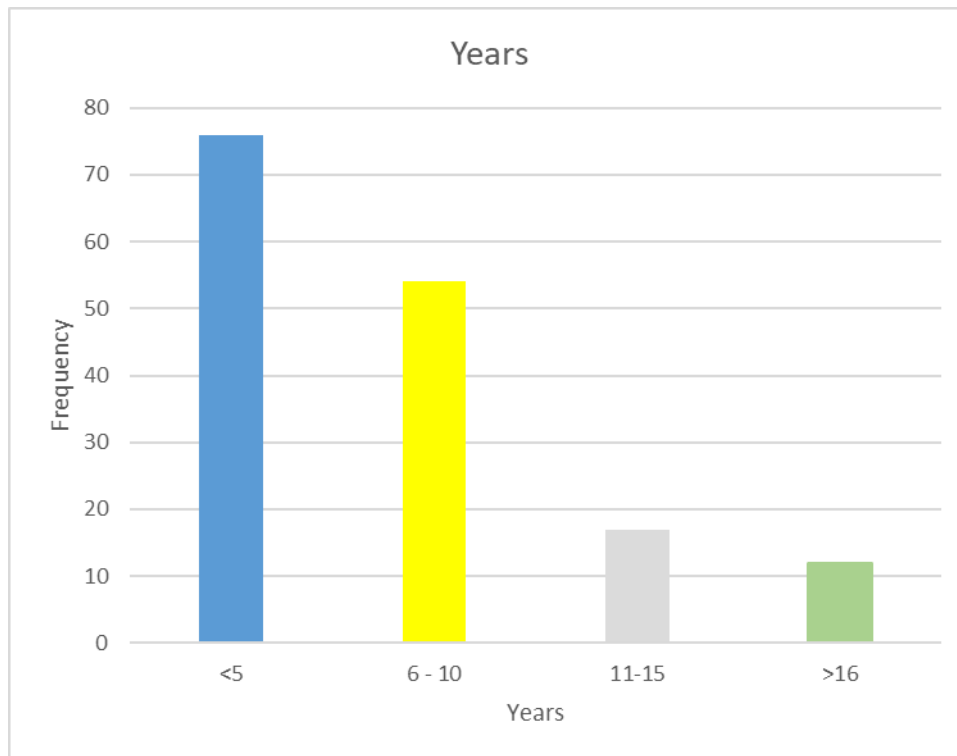


Figure 8 reveals the duration of respondents' engagement with e-Commerce systems, showcasing a diverse range of experiences. A substantial portion, comprising 47.8% of respondents, has utilized these systems for less than 5 years, indicating a significant influx of newcomers to e-Commerce. Meanwhile, 34% have a moderate tenure of 6-10 years, suggesting a sizable segment with a considerable level of familiarity. Additionally, 10.7% have engaged with e-Commerce for 11-15 years, and 7.5% have exceeded 16 years, reflecting a smaller but notable cohort of long-term users. Notably, the presence of established retail platforms like Takealot and Kalahari, operational for over 15 years, underscores the evolving landscape of e-Commerce adoption among end users, with a mix of both nascent and seasoned participants shaping the market.

4.1.4 Data screening

The individual respondents' response data was analysed using the IBM software SPSS (Statistics Package for Social Science) version 28. SPSS was used to screen for missing data from the 159 survey responses, where no missing data was captured. Therefore, the data was screened successfully and can be seen as valid.

4.1.5 Sample Outliers

Outliers are data points that have significant differences from other observations from a study (Mudau, 2023). When screening the outliers, SPSS was used to identify any values perceived as potentially low or high. The extreme outliers are typically three higher or three lower than the standard deviation of the respective mean (Hair et al., 2010). Scores standardized on specific items have reflected the number of standard deviations from the mean. All standardized scores were measured, and no items were identified as outliers.

4.1.6 Descriptive statistics

The components in this study are measured through two different scales. The first scale looks at system quality, service quality, data quality, information quality, user satisfaction and customer experience. These factors are measured through a seven-point Likert scale, where one equates to "strongly disagree", and seven equates to "strongly agree". The second grouping of factors looks at basic use and advanced use, using a six-point Likert scale, where one equates to "never" and six to "Very Often". Four would be the midpoint for the seven-point Likert scale, which would translate to all respondents who respond with an answer below four would typically disagree with the statement. Respondents who answer between 4 and 4,5 tend to be more neutral towards the statement. The respondents agree with the statement if the respondents' mean is more than 4,5.

The mean, standard deviation, skewness, and kurtosis of composites can be seen in table 8 below.

Table 8: Descriptive statistics of all factors

Description	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Information Quality	159	3,8	6,4	5,81	0,437	-1,359	3,743
Service Quality	159	1	7	4,74	1,378	-0,446	-0,497
System Quality	159	3,8	7	5,16	0,874	0,513	-0,687
Basic Use	159	2	6,7	5,54	0,757	-1,977	4,865
Advanced Use	159	1	6,3	3,12	1,409	0,41	-0,796
User Satisfaction	159	1	7	5,29	1,543	-1,458	1,599
Customer Experience	159	3,8	7	5,16	0,874	0,513	-0,687
Valid N (listwise)	159						

4.1.5.1 System Quality(SQ)

System quality looks to extract information from e-Commerce users and their views of e-Commerce platforms and the ease of use and availability to the users. The overall mean is 5,16, and the standard deviation is 0.874, as presented in Table 8 above. This suggests that most respondents agree that the e-Commerce system is useable and available. The IS use attributes were based on prior studies, where six previous items were used (Delone and McLean, 1992, 2003) and “measured using a 7-point Likert scale”. Table 9 below shows that the average mean for questions related to system quality ranges from 5,60 to 5,70. This suggests that respondents tend to agree about the system Quality of e-Commerce Systems.

Table 9: Descriptive statistics of system quality

Description	N	Range	Minimum	Maximum	Mean	Std. Deviation
SQ1	159	5	2	7	5,70	1,12
SQ2	159	4	3	7	5,64	1,13
SQ6	159	5	2	7	5,60	1,23

4.1.5.2 Information Quality (IQ)

Information Quality looks to extract information regarding end users of e-Commerce platforms' beliefs around information produced by e-commerce systems that is relevant, easy to use, accurate, and complete. The overall mean is 5.81, and the standard deviation is 0,44, as presented in Table 8 above. This suggests that most respondents agree that the eCommerce system information output is relevant, easy to use, accurate and complete. The IS use attributes were based on prior studies, where six previous items were used (Delone and McLean, 1992, 2003) and “measured using a 7-point Likert scale”. Table 10 below shows that the average mean for questions related to system quality ranges from 5,69 to 5,89. This suggests that respondents agree about the quality of information in e-commerce systems.

Table 10: Descriptive statistics of information quality

Description	N	Range	Minimum	Maximum	Mean	Std. Deviation
IQ1	159	3	4	7	5,81	0,70
IQ2	159	6	1	7	5,89	0,90
IQ3	159	6	1	7	5,74	0,90
IQ4	159	6	1	7	5,80	0,83
IQ5	159	3	4	7	5,89	0,78
IQ6	159	6	1	7	5,69	0,86

4.1.5.3 Service Quality (S1Q)

Service Quality looks to extract information regarding end users of e-Commerce platforms. Beliefs around service quality received by e-commerce systems are helpful, reasonable, on time and committed to resolving the problem. The overall mean is 4,74, and the standard deviation is 1,38, as presented in Table 8 above. This suggests that most respondents feel neutral that the eCommerce system's service quality is helpful, reasonable, on time, and committed to resolving the

problem. The IS use attributes were based on prior studies, where three previous items were used (Delone and McLean, 1992, 2003) and “measured using a 7-point Likert scale”. Table 11 below shows that the average mean for questions related to service quality ranges from 5,60 to 5,70. This suggests that respondents agree about the quality of information in e-commerce systems.

Table 11: Descriptive statistics of service quality

Description	N	Range	Minimum	Maximum	Mean	Std. Deviation
S1Q1	159	6	1	7	4,68	1,60
S1Q2	159	6	1	7	5,18	1,36
S1Q3	159	3	4	7	5,05	0,92
S1Q4	159	6	1	7	4,61	1,58
S1Q5	159	3	4	7	5,31	1,12

4.1.5.4 Data Quality (DQ)

Data quality looks to extract information regarding the data inputs on e-Commerce systems and whether they are accurate and complete. This factor was dropped due to weak results in the initial screening. Studies mention that the three main factors the D&M IS model should focus on are Information Quality, System Quality and Service Quality(Ojo, 2017).

4.1.5.5 User Satisfaction (US)

User Satisfaction seeks to extract information regarding end users of e-Commerce platform experience using e-commerce systems. The overall mean is 5,29, and the standard deviation is 1,54, as presented in Table 8 above. This suggests that most respondents tend to feel neutral that the eCommerce system user satisfaction is pleasant. The IS use attributes were based on prior studies,

where five previous items were used (Delone and McLean, 1992, 2003) and “measured using a 7-point Likert scale”. Table 12 below shows that the average mean for questions related to service quality ranges from 5,18 to 5,70. This suggests that respondents tend to agree about the user satisfaction of e-Commerce Systems.

Table 12: Descriptive statistics of user satisfaction

Description	N	Range	Minimum	Maximum	Mean	Std. Deviation
US1	159	5	2	7	5,47	1,34
US2	159	3	4	7	5,70	1,02
US3	159	6	1	7	5,31	1,47
US4	159	6	1	7	5,18	1,93
US5	159	6	1	7	5,40	1,59

4.1.5.6 Customer Experience (CE)

Customer Experience looks to extract information regarding end users of e-Commerce platforms' experience using e-commerce systems, which is acceptable and helps increase productivity, decision-making, and job performance. The overall mean is 5,16, and the standard deviation is 0,87, as presented in Table 8 above. This suggests that most respondents agree that e-commerce systems are acceptable and help increase productivity, decision-making, and job performance. The IS use attributes were based on prior studies, where five previous items were used (Delone and McLean, 1992, 2003) and “measured using a 7-point Likert scale”. Table 13 below shows that the average mean for questions related to service quality ranges from 5,24 to 5,50. This suggests that respondents tend to agree and enjoy the customer experience of e-Commerce Systems.

Table 13: Descriptive statistics of customer experience

Description	N	Range	Minimum	Maximum	Mean	Std. Deviation
CE1	159	3	4	7	5,24	0,88
CE3	159	3	4	7	5,35	1,12
CE4	159	3	4	7	5,35	1,02
CE5	159	3	4	7	5,24	0,996
CE6	159	3	4	7	5,50	0,86

4.1.5.7 Basic Use (BU)

Basic Use looks to extract information regarding end users of e-Commerce platforms and how frequently the respondents use the basic uses of the e-Commerce system. The overall mean is 5,54, and the standard deviation is 0,757, as presented in Table 8 above. This suggests that most respondents agree that e-commerce systems are acceptable and help increase productivity, decision-making, and job performance. The IS use attributes were based on prior studies, where four previous items were used (Delone and McLean, 1992, 2003) and “measured using a 6-point Likert scale”. Table 14 below shows that the average mean for questions related to service quality ranges from 3,63 to 4,41. This suggests that respondents tend to feel neutral regarding the basic use of e-Commerce Systems.

Table 14: Descriptive statistics of basic use

Description	N	Range	Minimum	Maximum	Mean	Std. Deviation
BU1	159	4	3	7	4,41	0,99
BU3	159	6	1	7	3,90	1,74
BU5	159	6	1	7	3,63	1,96
BU7	159	6	1	7	4,14	1,33

4.1.5.8 Advanced Use (AU)

Advanced Use looks to extract information regarding end users of e-Commerce platforms and how frequently the respondents use the advanced uses of the e-Commerce system. The overall mean is 3,12, and the standard deviation is 1,409, as presented in Table 8 above. This suggests that most respondents agree that e-commerce systems are acceptable and help increase productivity, decision-making, and job performance. The IS use attributes were based on prior studies, where six previous items were used (Delone and McLean, 1992, 2003) and “measured using a 6-point Likert scale”. Table 15 below shows that the average mean for questions related to service quality ranges from 2,81 to 3,6. This suggests that respondents tend not to use the advanced features of e-Commerce Systems. This suggests that end users tend to make more use of the basic uses of e-Commerce.

Table 15: Descriptive statistics of advanced use

Description	N	Range	Minimum	Maximum	Mean	Std. Deviation
AU1	159	6	1	7	2,81	1,81
AU2	159	6	1	7	3,06	1,73
AU5	159	6	1	7	3,26	1,62
AU6	159	6	1	7	3,60	1,66
AU7	159	6	1	7	3,04	1,68
AU10	159	6	1	7	2,91	1,85

4.1.7 Assessment of Normality

Table 8 above shows the “skewness and kurtosis coefficients” of all constructs which appear inside the model. Values of “skewness and Kurtosis Coefficients” between -2 and 2 are acceptable indications of Normality (George and Mallery, 2010). Therefore, according to table 8, all factors are acceptable besides the information Quality, which has a kurtosis of +3,74 and Basic use, which has

a kurtosis of +4,87. However, the central limit theorem states that deviation of the normality has little effect on large sample sizes (Muzzafar,2016). This translates to the abnormal kurtosis of the factors exceeding the threshold of -2 and +2, which have not concerned the overall result. Since there are no issues with the normality, we can use the principal component analysis to examine if items are loading with latent constraints.

4.1.8 Sample Adequacy

Before transitioning to a “principal component analysis (PCA)” to confirm the validity of multi-item scales, it is vital first to establish sample adequacy. Kaiser and Rice (1974) developed the “adequacy of the sample is measured using the Kaiser-Meyer-Olkin (KMO)” test. Field (2009) reports that the KMO measures sampling characteristics of the “ratio of the squared correlation between factors to the squared partial correlation between factors”. Correlations typically vary between 0 and 1; if the correlation is closer to 1, the correlation has produced reliable factors (Field,2009). If a value is between 0,5 and 0,7, it is regarded as poor; if the value is between 0,7 and 0,8, it is regarded as good; values between 0,8 and 0,9 are classified as great, and all values above 0,9 are seen as excellent (George and Mallery, 2010). The results displayed in table 16 indicate that the KMO result as 0,728. This result shows that the KMO is within acceptable range. This confirms that the sampling size is adequate to report on reliable factors.

Table 16: KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.728
Bartlett's Test of Sphericity	Approx. Chi-Square	9114.872
	df	561
	Sig.	.000

Bartlett developed a test that analysed whether correlations between survey items were large enough to conduct an appropriate factor analysis (Bartlett, 1954). This test has highlighted the strength of the relationship within factors. The research results showcase the approximate Chi-Square as 9114,82, and the significance is less than 0.001. this confirms that data can be usefully analysed within the PCA analysis.

4.1.9 *Principal Component Analysis (PCA)*

The orthogonal rotation (Varimax) method was used for factor analysis (Principal Component). “This method was selected because it essentially captures the components with high eigenvalues and organises by order of importance” (Hair et al., 2011). The factor analysis functions because measurable and observable variance can be reduced to a few latent factors that share common variance (Vonglao,2017). This is defined as the reduction of dimensionality. Unobserved factors are critical in the hypothetical model, even if they are not measured directly. Exploratory Factor Analysis (EFA) is the first step in constructing scales (Hair et al., 2011). EFA is a helpful tool and the first step in doing a Confirmatory Factor Analysis (CFA). EFA allows researchers to explore the main dimensions to produce a theory or model with latent constraints represented by sets of items (Sangthong, 2020). This study uses an EFA as there is insufficient research evidence of “the impact the use of e-Commerce has on customer experience in retail in South Africa”, so an initial EFA approach is warranted.

For a construct to be labelled a factor, it should have a minimum of three factors, also called scale items (Hair et al., 2010). The number of factors produced depends on whether the factor has a relationship with more than one factor (Murray, 2013). The rotation matrix has maximised high item loadings, minimising low item loading. This allows the model to be easily interpretable and is a simplified solution. When conducting the rotation on SPSS, five methods can be carried out: varimax, quartimax, equamax, direct oblimin, and promax

(Sangthong, 2020). This study used the varimax rotation method to maximise the high-loading items.

Furthermore, a “factor score coefficient matrix was used in the scores menu and opted for listwise exclusion, sorting by size and suppressing absolute values less than 0.40 in the options menu”. Suppressing absolute values, which show less than 0.40, allows for more accessible visuals of interpretation. This study looks at 159 responses, and the factor loading was 0.4 or less. Items with a loading of less than 0.4 were eliminated from the study. Table 15 below represents the results of the factor analysis. The PCA indicates that 6 iterations were looked at using the Kaiser normalization. A total of 34 items were used on 7 factors. The total variance is calculated at 83,88%

Table 17: Factor Analysis Results

Rotated Component Matrixa							
	Component						
	1	2	3	4	5	6	7
IQ1		0,848					
IQ2		0,825					
IQ3		0,932					
IQ4		0,816					
IQ5		0,857					
IQ6		0,911					
SQ1						0,936	
SQ2						0,944	
SQ6						0,951	
S1Q1				0,816			
S1Q2				0,829			
S1Q3				0,702			
S1Q4				0,837			
S1Q5				0,835			
BU1							0,794
BU3							0,829
BU5							0,777
BU7							0,748
AU1	0,965						
AU2	0,981						
AU5	0,912						
AU6	0,775						
AU7	0,932						
AU10	0,978						
US1			0,905				
US2			0,754				
US3			0,821				
US4			0,918				
US5			0,921				
CE1					0,866		
CE3					0,731		
CE4					0,909		
CE5					0,705		
CE6					0,917		
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.							
a. Rotation converged in 6 iterations.							

No items are eliminated from the above scale displayed in Table 17, as all items are above 0.40. All loading factors can be considered as high. The analysis can show that all exploratory factor analysis is associated with a component.

Information Quality (IQ) was measured through 7 items. In table 17, five items loaded highly onto the same factor and non-cross-loaded above 0.40 onto other factors. Therefore, two items needed to be dropped from this analysis due to the items not loading.

Service Quality (S1Q) was measured through 5 items. In table 17, 5 items loaded highly onto the same factor and non-cross loaded above 0.40 onto the other factors. Therefore, no items need to be dropped from this analysis.

System Quality (SQ) was measured through 6 items. In table 17, 3 items loaded highly onto the same factor and non-cross loaded above 0.40 onto the other factors. Therefore, three items need to be dropped from this analysis due to the items not loading.

Data Quality (DQ) was measured through 3 items. The Data quality items were dropped from the study as the items did not load; therefore, all items regarding Data Quality needed to be dropped from this analysis.

Basic Use (BU) was measured through 8 items. In table 17, 4 items loaded highly onto the same factor and non-cross loaded above 0.40 onto the other factors. Therefore, four items need to be dropped from this analysis due to the items not loading.

Advanced Use (AU) was measured through 12 items. In table 17, 6 items loaded highly onto the same factor and non-cross loaded above 0.40 onto the other factors. Therefore, six items need to be dropped from this analysis due to the items not loading.

User Satisfaction (US) was measured through 5 items. In Table 17, 5 items loaded highly onto the same factor and non-cross loaded above 0.40 onto the other factors. Therefore, no items need to be dropped from this analysis.

Customer Experience (CE) was measured through 7 items. In Table 17, 5 items loaded highly onto the same factor and non-cross loaded above 0.40 onto the other factors. Therefore, two items need to be dropped from this analysis due to the items not loading.

The model consists of 8 constructs, where 7 are loaded, as confirmed by the factor structure extracted by the PCA. The analysis can move on to the reliability of the scale.

4.1.10 Reliability and Validity

For a scale to be valid and have practical use, it must be reliable (Byrne, 2013). This reliability is the ability of the scale to produce the same results when used in the same conditions with the same objectives (Hair et al., 2010). This study used a scale of 8 factors, where 7 factors to measure the proposed research conceptual framework, which can be identified as information quality (IQ), Service Quality (S1Q), System Quality (SQ), Basic Use (BU), Advanced Use (AU), User Satisfaction (US), and Customer Experience (CE). The Data Quality (DQ) component was left out of the study. Table 18 below presents the results of the Cronbach alpha, Average Variance Extracted (AVE) and Composite Reliability (CR). Cronbach alpha was used when looking at reliability. The scale is regarded as reliable, with the Cronbach Alpha being at least 0.70(Hair et al.,2010). Table 18 indicates that the Cronbach alphas range from 0.83 to 0.99, above the recommended value of 0.70. the CR ranges from 0,86 to 0.97, above the recommended value of 0.70. AVE was also calculated for each construct, which showed a minimum value of 0.62, above the recommended value of 0.40.

Table 18: CR and AVE results with Cronbach Alpha

						Composite Score	
	Number of Initial Items	Number of Surviving Items	Cronbach Alpha	Average Variance Extracted (AVE)	Composite Reliability	Mean	Standard Deviation
Information Quality	7	5	0,942	0,75	0,947	5,806	0,437
System Quality	6	3	0,988	0,891	0,961	4,736	1,378
Service Quality	5	5	0,912	0,649	0,902	5,159	0,874
Basic Use	8	4	0,832	0,62	0,867	5,541	0,757
Advanced Use	12	6	0,97	0,857	0,973	3,116	1,408
User Satisfaction	5	5	0,932	0,75	0,937	5,293	1,543
Customer Experience	7	5	0,916	0,689	0,916	5,159	0,874

4.1.11 Correlation matrix of composite scores

“Construct validity” is achievable using “convergent and discriminant validity” (Sangthong,2020). the inter-correlation has been calculated and presented in table 18. Discriminant validity requires that the measures of a construct must correlate more highly with each other and not correlate as highly with measures of other constructs (Hair et al.,2010). AVE is used to test this principal by comparing inter-construct correlations with the AVE or square root of each one of the AVE. The Square roots of the AVE are presented in table 18. It is shown as larger than the inter-construct correlations in table 18. The “discriminant validity” is thus confirmed by constructs that share more variance with their own items than other constructs that form part of the model. Looking at the results holistically has helped confirm the constructs' reliabilities and convergent and discriminant validities. The model can be tested in the next section.

Table 17 Correlation Matrix

Correlations		S1Q#	US#	AU#	SQ#	IQ#	BU#	CE#
S1Q#	Pearson Correlation	0,9472						
US#	Pearson Correlation	.240**	0,9607					
	Sig. (2-tailed)	.002						
AU#	Pearson Correlation	.224**	.080	0,9020				
	Sig. (2-tailed)	.005	.313					
SQ#	Pearson Correlation	.522**	.198*	.304**	0,8671			
	Sig. (2-tailed)	<.001	.012	<.001				
IQ#	Pearson Correlation	.442**	.344**	.236**	.350**	0,9731		
	Sig. (2-tailed)	<.001	<.001	.003	<.001			
BU#	Pearson Correlation	.260**	.028	.102	.307**	.209**	0,9373	
	Sig. (2-tailed)	<.001	.722	.201	<.001	.008		
CE#	Pearson Correlation	.523**	.204**	.290**	.905**	.355**	.213**	0,9165
	Sig. (2-tailed)	<.001	.010	<.001	<.001	<.001	.007	
** Correlation is significant at the 0.01 level (2-tailed).								
* Correlation is significant at the 0.05 level (2-tailed).								

4.2 Results of Model Testing

In this section, the collected data is formally tested to test the studies measurement and structural model further. Before the hypothesised structural model is tested, it is suggested to perform a CFA as a final test of the “measurement model” to ensure all items have loaded correctly on the hypothesized constructs in the model (Mudau, 2021). The CFA analysis had 7 measuring items, and 34 factors were analysed. One factor with three items, Data Quality, was excluded from the study. One of the factors was dropped in the EFA and PCA. The CFA proposed factor structure is an excellent fit for the data collected.

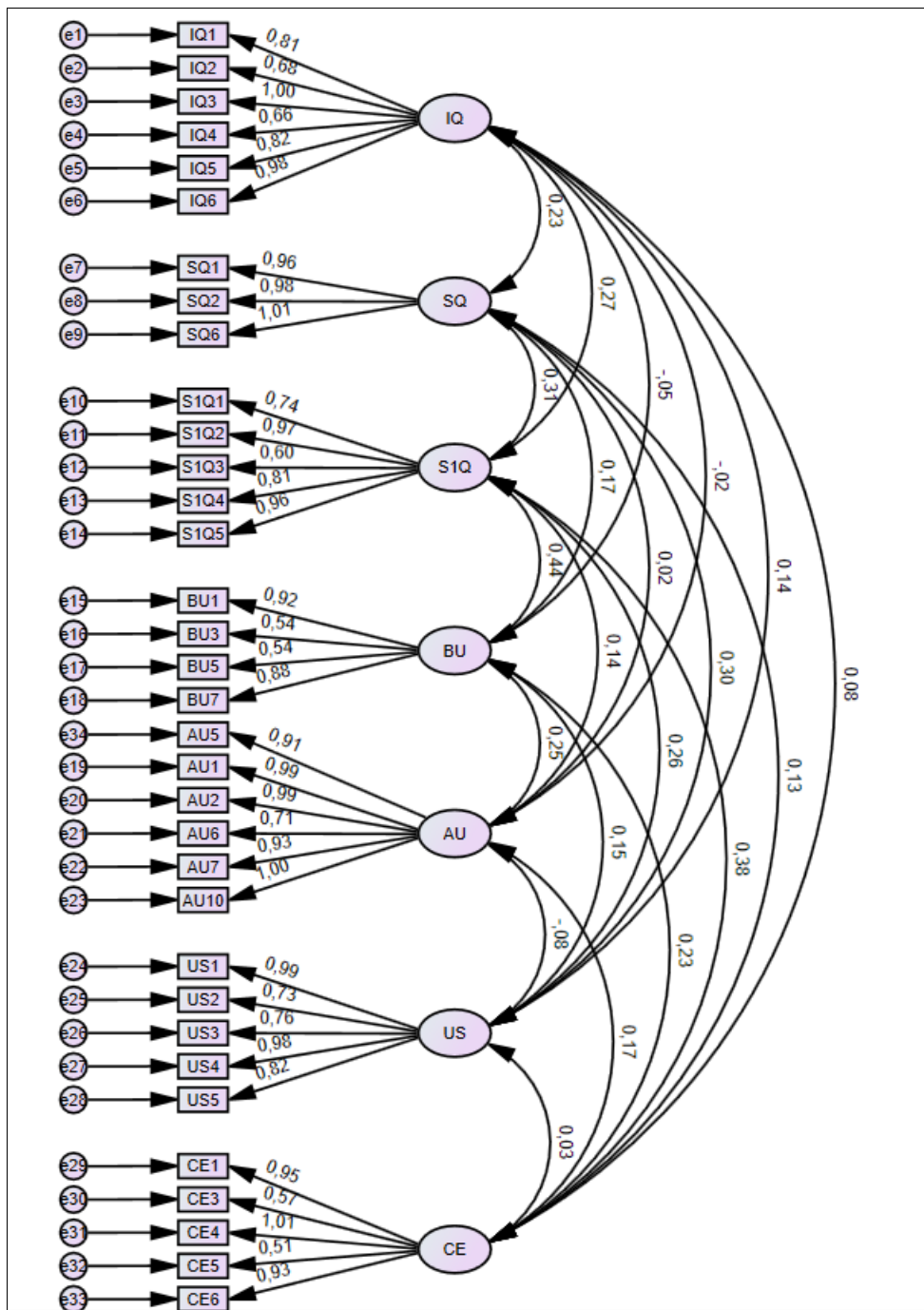
The second step is to follow the structural equation modelling (SEM) to test the hypothesis represented by the relationship between dependent factors and independent factors. SEM was conducted on AMOS 28.

4.2.1 CFA Model Results

The proposed theoretical model and the relationship between the measurement items were assessed using the CFA model. It is essential to look at the measurement model fit and measure the validity of the tested model. When

evaluating the measurement model of the CFA, it is not necessary to differentiate between exogenous and endogenous constructs. It is vital to differentiate between exogenous and endogenous constructs during model testing. Figure 9 indicates all factors to be linked together, which are shown in rectangular shapes. The covariance is illustrated through two-headed arrows in Figure 9, and the casual relationships are one-headed arrows. In Figure 9, the model includes the main effects, construction, and measurement items. Figure 9 focuses on information quality, service quality, system quality, basic use, advanced use, user satisfaction and customer experience.

Figure 9: CFA Model



4.2.2 Goodness of Fit Indices

The models' parameters and all analyses were conducted on a covariance matrix using the "maximum-likelihood" method. Model fit indices must be considered

when analysing the goodness of fit model. Firstly, the chi-square (X^2) needs to be assessed. The X^2 was high, and the ratio was $X^2/DF = 25,560$. This may result in the hypothesis being rejected unnecessarily (Hair et al., 2010), as even small differences between the observed model and the good model fit might be found to be significant (Mudau, 2021). The fit indices in table 19 below are: [GFI= 0.789; NFI=0.658; CFI=0.692; IFI=0.694; RMSEA=0.19; DF=25.560; TLI=0.676 and RFI=0.623]. The CFA model validity indicates that some model fit indices were not acceptable. However, the main objective of the CFA model is to ensure all items of the scale load on the hypothesized model. the CFA test was conducted to ensure construct validity and factor loadings (Serrano Archimi, Reynaud, Yasin, and Bhatti, 2018). The results show that items are loading appropriately and in line with the relevant theory. The factor loadings of this model range are between 0,70 and 0,98, which is above the prescribed threshold of 0.40. The hypothesised model is tested in the next section.

Table 19: Goodness of Fit Indices results

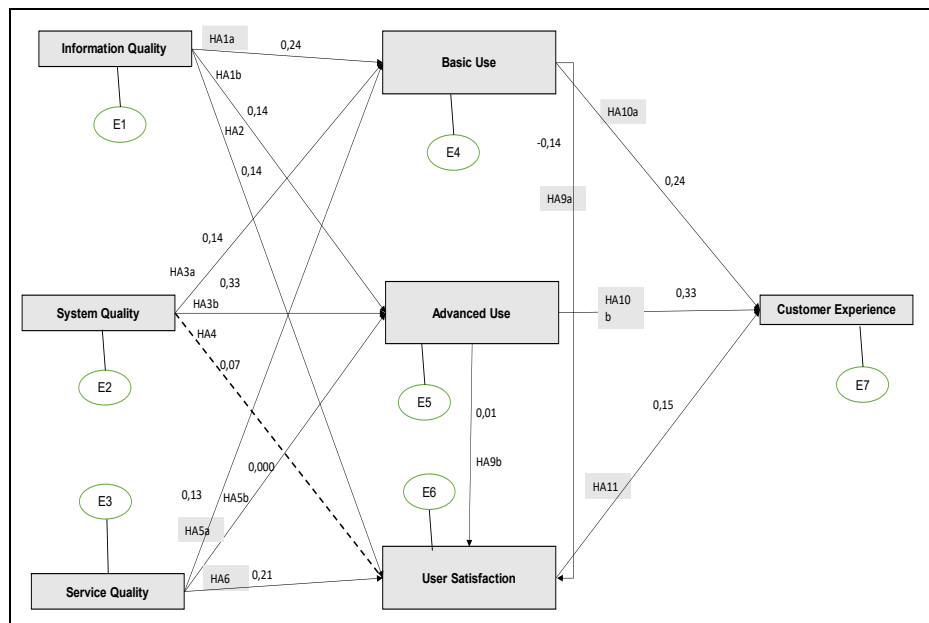
Fit Index	Recommended Value	CFA Results	Original Structural Model	Final Structural Model
Goodness-of-fit (GFI)	Less than 0.80 (No fit) Between [0.80-0.90] (acceptable) Above 0.90 (Perfect fit)	0,789	0,845	0,991
Normed fit index (NFI)	Less than .80 (poor) Between [0.80-0.90] (acceptable) Above 0.90 (good)	0,658	0,834	0,918
Comparative fit index (CFI)	Less than 0.90 (poor) Above 0.90 (good)	0,692	0,862	0,978
Incremental fit index (IFI)	Less than 0.90 (poor) Above 0.90 (good)	0,694	0,805	0,933
Root mean square error of approximation (RMSEA)	Less than 0.05 (good) Between [0.06-1] (acceptable) Above 1 (poor)	0,19	0,325	0,0380
Chi-square (χ^2 /DF)	Less than 3 (good) Between [3-5] (acceptable) Above 5 (poor)	25,560	5,703	1,67
Tucker-Lewis Index (TLI)	Less than 0.80 (poor) Between [0.80-0.90] (acceptable) Above 0.90 (good)	0,676	0,887	0,989
Relative Fit Index (RFI)	Less than 0.80 (poor) Between [.80-.90] (acceptable) Above .90 (good)	0,623	0,865	0,994

4.2.3 Original Model Structural Testing

The results in Table 19 above indicate that reliability, convergent validity, and discriminant validity have been tested and passed by the EFA and CFA techniques. The following steps were taken to test the hypothesised relationships between the exogenous and endogenous latent constructs (Refer to Figure 9), which is done by testing the structural model. The relationships between dependent and independent factors are specified in this step. A one-head arrow indicates the causal relationships between the dependent and independent factors. The covariance between independent factors is indicated through two header arrows. This study uses accessible pathways for hypothesized casual relationships between factors being tested. The accessible pathways vary, and there are no fixed pathways per previous studies (Mudau, 2021).

The test for the initially hypothesised model is illustrated in figure 5. Results indicate that there is a poor model fit. The model fit does need to improve so testing between the casual relationship amongst factors can be completed. The original model indicates that $P=0.000$ is significant; however, $X^2/DF=5.703$ is higher than the recommended value between 3 and 5. The fit indices, as displayed in Table 18, are as follows: [GFI=0.845; NFI=0.834; CFI=0.862; IFI=0.805; RMSEA=0.325; TLI=0.887; RFI=0.865], which shows the fits are acceptable besides CFI and IFI. There is a need for model improvement so that a better model fit is achievable. Some hypotheses or constructs would need to be removed to improve the model, and some factors may need to be dropped. Some constructs may be constrained to zero, which means they would not be part of the tested model. The error estimate co-variance may also be drawn to improve the model fit.

Figure 10: Original Model



4.2.4 Final Model Testing

Table 20: Modification Indices

	M.I.	Par Change
e2 <--> e3	19,381	,133
e1 <--> e3	30,911	,265
e1 <--> e2	43,079	,625

Table 20 shows the modification indices, which showcase the high covariances that could have compromised the theoretical model being tested in this study. The modifications below improved the model fit and allowed the indices to be covaried.

The final SEM AMOS model results are presented in Figure 10; information quality, system quality and service quality are modelled in the first order, followed by essential use, advanced use, and user satisfaction, which forms part of the second order. The customer experience is influenced by both basic and advanced use and user satisfaction. The above was hypothesized as 17

hypotheses in Chapter 2, which looks at the relationship between basic use and advanced use and user satisfaction with information quality, service quality, system quality and Data Quality, respectively. Data Quality, however, is excluded, as the potential hypotheses are not supported due to items loading weakly. The final model includes all paths between the control factors where there is a significant effect, and it leaves out paths with no relationship.

The final model reports $\chi^2/df = 1.67$, which is insignificant compared to the default model, which also showed $\chi^2/df = 1.67$. The $\chi^2/df = 1.67$ is seen as a good fit as it is below the recommended value of 3. Based on the results in table 18, the fit indices improve drastically. The fit indices are now as follows: [GFI=0.991; NFI=0.918; CFI=0.978; IFI=0.933; RMSEA=0.0380; $df=1,6$; TLI=0.989; RFI=0.994], which indicate a good model fit. All hypotheses are displayed in the final model.

Table 20 showcases the modification indices that have helped improve the final model.

The results of the hypotheses can be seen in Table 21, and the R-Squared results in table 22.

Figure 11: Final Model

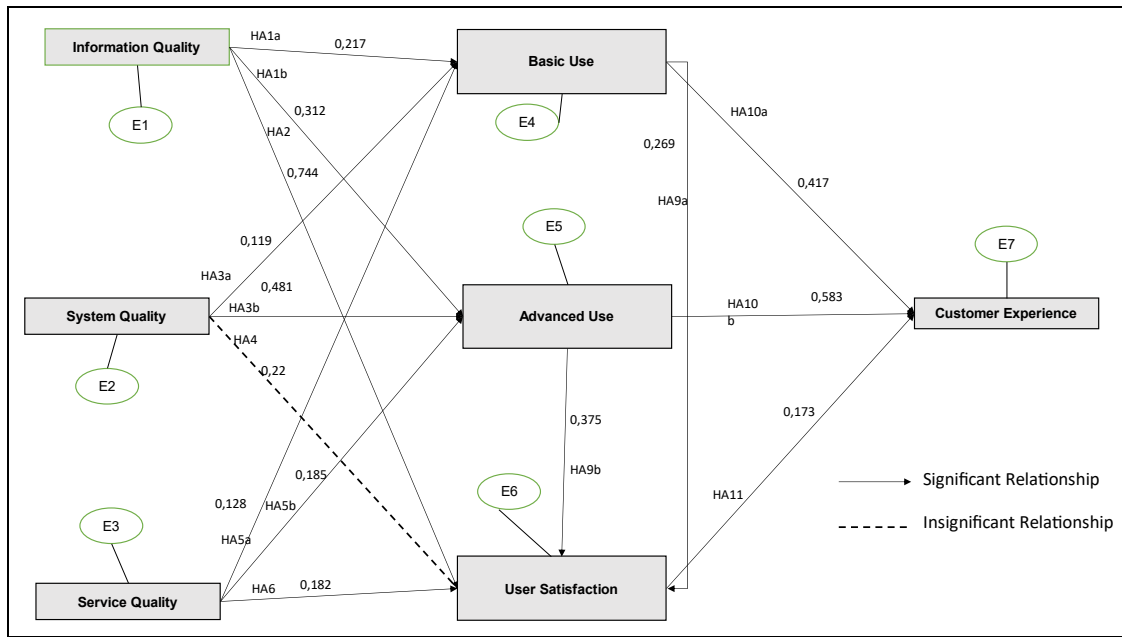


Table 21: Research finding results

Hypothesis	Path			Estimate	S.E.	C.R.	P	Supported
HA1a	IQ	--->	BU	0,22	0,11	2,05	0,045	Supported
HA1b	IQ	--->	AU	0,31	0,10	3,15	0,001	Supported
HA2	IQ	--->	US	0,74	0,27	2,73	0,006	Supported
HA3a	SQ	--->	BU	0,12	0,04	2,77	0,006	Supported
HA3b	SQ	--->	AU	0,48	0,12	4,11	***	Supported
HA4	SQ	--->	US	0,22	0,14	1,55	0,121	Not Supported
HA5a	S1Q	--->	BU	0,13	0,04	3,20	0,001	Supported
HA5b	S1Q	--->	AU	0,19	0,07	2,5	0,011	Supported
HA6	S1Q	--->	US	0,18	0,09	2,03	0,042	Supported
HA9a	BU	--->	US	0,27	0,09	3,06	***	Supported
HA9b	AU	--->	US	0,38	0,11	3,44	***	Supported
HA10a	BU	--->	CE	0,42	0,11	3,98	***	Supported
HA11	US	--->	CE	0,17	0,06	2,92	0,003	Supported
HA10b	AU	--->	CE	0,58	0,17	2,79	***	Supported

Table 22: Squared Variance

Variance	
Variables	Estimate
US	0,2864
BU	0,184
AU	0,30976
CE	0,391

As presented in Table 21, thirteen of the fourteen hypotheses formulated were directly supported by the model being tested. The factors influencing the advanced use of e-commerce [IQ ($p < 0,001$); SQ($p < 0,001$); S1Q($p < 0,050$)] have a positive influence on the use of e-Commerce systems by end users. This translates to HA5b, HA3b and HA1b all being supported. By improving information quality, system quality and service quality, the end users make use of the advanced use of e-Commerce platforms. End users have experienced better use of the e-Commerce system if all the factors influencing advanced use are of high quality, essentially assisting with decision-making. The factors influencing the basic use of e-commerce platforms were also found to have a positive significance from the factors contributing to the use of the e-Commerce systems by end users [IQ ($p < 0,050$); SQ($p < 0,050$) S1Q($P < 0,001$)]. This translates to HA5a, HA3b, and HA1b all being supported. There was also a view of factors positively influencing user satisfaction for end users of e-Commerce platforms, which included [IQ ($p < 0,050$); S1Q ($p < 0,050$)], which were acceptable, but service quality to user satisfaction was not acceptable with a $p > 0,050$. Therefore, HA2 and HA6 are supported, whereas HA4 is rejected with $p > 0,050$. This translates to better user satisfaction for end users if information quality and service quality are improved, but improving system quality does not improve user satisfaction, according to the results of table 21. Some reasons which have been raised regarding the impact of system quality not affecting e-Commerce is due to work arounds to the system, which include end users being able to call organisations as well as email organisations to gain information about products and services, seamlessly (Ishaya & Rigneau, 2007; Nirwanto & Andarwati, 2019).

The advanced use of e-Commerce systems was tested against customer experience, which showed a positive influence. This shows that HA10b has been supported, which translates to confirm the study title, “The impact of the use of e-Commerce on customer experience for retail in South Africa”, is supported through the research findings. Customer experience was positively influenced by [AU($p < 0,001$); BU($p < 0,001$); US($p < 0,005$)]. This translates to HA10a, HA10b, and HA11, which are all supported. This translates to improving the basic use and user satisfaction of e-Commerce platforms for end users, improving the customer experience for end users of e-Commerce platforms for retail in South Africa. User Satisfaction have also been improved the customer experience for users of e-Commerce platforms for retail in South Africa.

The final view of hypotheses looks at basic and advanced use of e-Commerce platforms by end users also positively influenced user satisfaction, with both factors regarding basic use and advanced use having a positive significance against user satisfaction [AU($p < 0,001$)); BU($p < 0,001$)]. This translates to HA9a and HA9b both being supported. This means that if the basic use and advanced use of e-commerce platforms by end users are improved, it has positively affected the user satisfaction of end users of e-Commerce platforms.

The results of the factors shown in table 22 can be interpreted as follows: [US= 29%; BU= 18%; AU=30%; CE= 39%], these values are all acceptable, as any values lower than 50% is seen as acceptable (Frost, 2017).

4.3 Chapter conclusion and summary

In this chapter, the cross-sectional results of “The impact of the use of e-Commerce on customer experience for retail in South Africa” were examined through numerous tests being conducted and passed to ensure that the data being presented for the different factors were accurately displayed and calculated. The statistical analysis was formulated, and diagrams built to

graphically illustrate the relationships and results of the various factors discussed in this chapter.

The chapter focused on looking at the empirical results from the Structural Equation modelling techniques implemented and used throughout this chapter. Demographics, Data screening, Sample Outliers, Descriptive statistics, assessment of normality, sample adequacy, Principal Component Analysis (PCA), reliability and validity, Correlation matrix of composite scores, Confirmatory Factor Analysis (CFA), goodness of fit indices, original model structural testing and final model testing was all examined and explained in detail in this chapter. The results have shown that data quality is a factor that needs to be dropped, as it was unable to load in the PCA. Further to this, there was no relationship between system quality and user satisfaction. The most significant finding has been the advanced use correlation to customer experience being stronger than the basic use of e-Commerce systems correlation to customer experience.

CHAPTER 5. Discussion of Results

5.1 Introduction

This chapter's purpose is to understand the system success factors that influence the use of e-Commerce systems with a specific focus on the advanced use of e-Commerce and the basic use. *RO1* which is focused on “*To examine factors influencing the advanced use of e-commerce*”. This chapter focuses on three factors influencing the use of e-Commerce systems. These factors included information quality, system quality and service quality. In addition, *RO2* focused on being able “*To examine the impact of advanced use of e-commerce on customer experience*.”. This objective was tested by developing an e-Commerce IS Success model built on an extended Delone and Mclean IS success model. End users of e-Commerce systems collected data through a survey distributed through LinkedIn. The study extended the use of systems to examine the basic and advanced use of e-Commerce systems and how use impacts customer experience and user satisfaction.

5.2 Factors that influence the Uses of E-commerce Platforms

The factors displayed below indicate which of the factors affects the use of e-Commerce platforms:

Table 23: Factors influencing the use of e-Commerce.

Factor	Basic Use	Advanced Use	User Satisfaction
Information Quality	Yes	Yes	Yes

System Quality	Yes	Yes	No
Service Quality	Yes	Yes	Yes

The Delone and Mclean IS success model originally had 6 factors: system Quality and Information Quality, Use, user satisfaction, individual impact and organisational impact (Kandari et al., 2011). The model was extended with service quality added and net benefit replacing individual and organisational impacts (Delone & McLean, 2003). This study has used the updated Delone and Mclean model as a base but has three set factors that impact the use of systems and user satisfaction: information quality, system quality, and service quality (Urbach & Müller, 2011). In the adapted model used in this study, the use is split into basic and advanced use, and an additional Factor of Data Quality is added, with table 23 indicating whether these factors impact the basic use, advanced use, and user satisfaction. Data quality had to be dropped due to factors failing most of the Structural Equation Modelling (SEM) (Stein et al., 2012). By extending the Delone and Mclean IS success model, the uses of e-Commerce platforms can be better understood, as individuals may better understand one use over the other (Ambardar & Aeri, 2013).

5.2.1 Information quality

Information quality refers to how end users perceive outputs from information systems, these include if reports are well formatted, the accuracy of information displayed, and if the information displayed is relevant (Urbach & Müller, 2011). Information quality was found to be a factor that influences the types of use of e-Commerce systems. This confirmed that HA1a and HA1b was supported. Information quality also had an influence on user satisfaction, which was shown with HA2 being supported. Most respondents find high information quality and agree that the information quality is accurate and relevant. Ensuring that a high

information quality is provided through accurate information and the information is relevant is critical to improve the use of e-Commerce systems and user satisfaction. These results were expected as previous studies show information quality as a key attribute to system success(Alkın, 2024; Mohdhar & Shaalan, 2021). These results are now also supported by e-Commerce systems.

5.2.2 System Quality

System quality has been found to impact the advanced use of e-Commerce Systems. System quality measures of e-Commerce can be identified as the platform's reliability and availability for end users to make transactions (Hanif et al., 2010). Most respondents agree that the e-Commerce system is easy to use and stable. System quality in the adapted e-commerce IS success model was a factor that influenced the types of use of e-commerce systems. Therefore, HA3a and HA3b were supported. However, system quality to user satisfaction has not been supported, therefore HA4 is not supported. System quality is therefore seen as an essential driver to the use of e-commerce systems, but it may not necessarily be important for user satisfaction. This means that e-Commerce systems is always available for use by the end users. Surprisingly, this does not correspond with previous studies which indicated that system quality was important to the types of use of a system, as well as to user satisfaction(Mkinga & Mandari, 2020; Nurikmah et al., 2023; Satria Wijaya et al., 2021; Sharkey et al., 2006). The reason why system quality did not affect user satisfaction is due to the fact that organizations have alternative methods to provide customers with information, which includes telephonic calls and emails regarding specific products which customers are looking for (Nirwanto & Andarwati, 2019; Prabawanti & Sihombing, 2023).

5.2.3 Service Quality

The final factor tested in the adapted Delone and Mclean IS success Model in this study was Service Quality. Service Quality was seen to influence the use of e-Commerce systems and user satisfaction. Hypothesis HA5a, HA5b and HA6 were all supported. Service quality is the component that influences how end users use the system, whether the system satisfies users' experience and whether support is provided timeously to end users (Eom & Arbaugh, 2011). Most respondents agree that the system is easy to use, and the system satisfies the user needs. Service quality is therefore seen as a key factor to influence the types of use and user satisfaction for e-Commerce systems. This result was expected, as previous studies showed that service quality had a high degree of influence into the use and user satisfaction (Nurikmah et al., 2023; Satria Wijaya et al., 2021). Customers would want to receive service quality on e-Commerce systems, and this can be interpreted as level of support an end user would receive when the e-Commerce system would stop working, or when there is an error made on the e-Commerce system.

5.3 Type of Use of e-Commerce Platforms.

The Delone and Mclean IS success Model has the use influencing the net benefits per the original model (Delone & McLean, 2003). The Delone and Mclean IS success model has a single unidimensional construct (Mudau et al., 2023). Past studies have continued using the single unidimensional construct when testing IS success and the use of systems continuously is identified as a key influence to the net benefit (Odabas & Kahramanoğlu, 2023; Torre & Santos, 2022). The adapted Delone and Mclean IS success model used in this study differentiates the types of use, between basic use and advanced use. Introducing this design into the Delone and Mclean Adapted model will allow the research to uncover how end users can utilize e-Commerce systems a lot better (Kühnert,

2024). Understanding the differences and benefits between the basic and advanced use allows the study to gain better insights into customer experience.

The basic use of e-commerce systems refers to making use of the basic features that an e-commerce system has to offer. Customers typically make use of the basic features of e-Commerce systems which include buying products and making payments. Respondents tend to agree that basic features typically allow end users the functionality of buying and paying for products, are important for customer experience and user satisfaction. The basic use typically gets people to adopt using a system, and e-Commerce will allow end users to access the standard features available on e-Commerce platforms, such as selecting a product and paying for it (Purnama et al., 2024). The results of this study have not been looked at prior to this, and basic use of e-Commerce on customer experience and user satisfaction is a new contribution that has been made.

The advanced use of e-Commerce systems is a vital type of use in supporting customer experience and user satisfaction. This study has uncovered that the advanced use of e-Commerce systems will assist with achieving a better customer experience and user satisfaction. For end users to achieve a high level of customer experience and user satisfaction, making use of the advanced features which include newer technologies, including artificial intelligence, augmented reality, virtual reality, blockchain payments and self-service functionality (Salem Al-Mamary et al., 2014). These features have been identified as key advanced features to help achieve the advanced use of e-Commerce systems. Without these key advanced features, it will be difficult to achieve the advanced use of e-Commerce systems (Hadiantini et al., 2021). Organizations will need to continue in investing in features such as Artificial intelligence, electric word of mouth, personalization, personalized marketing and self-service features to ensure end users continue adopting the advanced use of e-Commerce platforms. (N. et al., 2018). This is a new contribution as no prior studies looked to distinguish the types of use and its effects on customer experience and user

satisfaction. Future studies should continue researching the difference between the basic and advanced use to fully understand the effects on customer experience and user satisfaction related to e-Commerce systems. The results of the study showed that advanced use had stronger coefficient paths to customer experience and user satisfaction than basic use did. Future research should continue to distinguish between the basic use and the advanced use of information systems.

5.4 User Satisfaction influence customer experience in e-commerce systems

The results of User Satisfaction on customer experience can be seen.

The Original Delone and Mclean Success Model shows that user satisfaction directly impacts individual impact(Delone & McLean, 2003). The updated version of the Delone and Mclean Model introduced net benefits in place of individual impact and showed that user satisfaction directly impacts net benefit(Petter et al., 2008). The adapted Delone and Mclean IS success model used in this study draws a relationship between user satisfaction and the customer experience of e-Commerce platforms in South Africa.

User satisfaction can be defined as the emotions evoked through the use of an e-Commerce platform (Prabawanti & Sihombing, 2023). User satisfaction has a positive contribution on customer experience. If end users enjoy using e-Commerce systems, it will help contribute towards productivity, system performance, quality decision making and solving potential problems faster(Irene, 2023). User satisfaction can be perceived as how end users feel about an information system (Mudau, 2021). User satisfactions mean was high, showing that most respondents tend to agree that it does influence customer experience. User satisfaction has been supported as an element which affects customer experience in e-Commerce systems, with HA11 being supported. This study has

shown that having a good user satisfaction will positively influence customer experience for end users of e-Commerce platforms, which is what prior studies have also discovered ((Lutfi, 2023; Mamakou et al., 2023; Prabawanti & Sihombing, 2023; Sarwar et al., 2023)

5.5 Customer experience of e-Commerce systems

The Delone and Mclean IS success model shows that net benefits is the final result that the model tries to achieve (Ojo, 2017). The benefits measure the impact of using an IS system, as well as the impact of user satisfaction on an IS system. The net benefit is identified as the most important success factor by Delone and Mclean (Mudau et al., 2023). Prior studies have shown that by having a higher net benefit results in a higher use of the system, which results in a higher user satisfaction (Hadiantini et al., 2021; Pei Kian, 2023; Shi et al., 2019). In this study, the net benefit will be focusing on customer experience, to help understand what provides end users with a good customer experience, and for businesses to then look to implement the elements which provide a good customer experience.

Customer Experience can be defined as the feeling and emotion that a customer feels when receiving a service from a specific platform (Reddipalli, 2020). Customer experience has been identified as the net benefit, which is being investigated in the adapted Delone and Mclean IS success model being implemented in this model (McLean et al., 2014). The factors influencing customer experience in this study include Basic Use, Advanced use, and user satisfaction. The types of use and user satisfaction have positively influenced customer experience, with the factors being measured through the survey including how e-commerce improves job satisfaction, effectiveness of the job, improves decision making, helps with identifying problems faster and making decisions quicker (Nuseir et al., 2023). This result has provided new findings as the basic and advanced use have not been measured against customer

experience. Advanced use showed a stronger coefficient, which confirms that customers who have access to the advanced features of e-Commerce systems will gain more benefits and have a better experience on the e-commerce system. The positive influence between user satisfaction and customer experience was expected, as prior studies show strong relationships between the respective user satisfaction and customer experience (Mamakou et al., 2023; Setiadi et al., 2023; Shi et al., 2019). The study's findings indicates that advanced use has a stronger coefficient as compared to basic use. This means that the organizations should invest in training the users to use more advanced features of e-commerce in order to truly reap the benefits of the implementation of e-Commerce in the organization.

5.6 Chapter Conclusion and Summary

This chapter focused on the influences of e-Commerce system characteristics on e-Commerce system use and the effect of the use on customer experience for end users of e-Commerce systems in retail in South Africa. The chapter provided in depth interpretations on the key findings of the structural model on e-Commerce IS success model and provided confirmation of the *RO1 and RO2*. This chapter has found the factors influencing the advanced use of e-Commerce to be information quality, system quality and service quality. This was confirmed with the analysis of the response of 159 end users of e-Commerce platforms in retail in South Africa. The study has also uncovered that the advanced use of e-Commerce systems has a stronger coefficient relationship towards customer experience to the basic use.

Further to this, the study has focused on the relationship between the uses of e-Commerce and its relationship to user satisfaction, and the system characteristics influencing user satisfaction. Information quality and service quality had a relationship with user satisfaction, but system quality did not have a relationship with user satisfaction. The factors which influenced user satisfaction was

information quality, system quality and service quality. Service quality has also been identified as a factor which affects customer experience. The next chapter will focus on the summary of the study, and the contribution to the study.

CHAPTER 6. Recommendations and Conclusion

6.1 Introduction

Through the previous chapters (3,4 and 5), the study of “The impact of the use of e-Commerce on customer experience for retail in South Africa” was validated. In this chapter, the summary of each chapter is completed, and the conclusion of the thesis will be discussed in greater detail. The research contribution, including theoretical, contextual, and methodological contributions, will be discussed in greater detail. Lastly, the limitations and future research that can be conducted will also be discussed.

6.2 Summary of Study

The study is made up of 5 chapters, excluding this chapter. These chapters highlight the study in greater detail.

Chapter 1 looks at the research problem identified and the reason for conducting the study. The first problem was to investigate the factors influencing individual customers' advanced use of e-commerce. There was also a need to distinguish between the basic and advanced use of e-commerce by individual users, as previous studies did not distinguish between the basic and advanced use but instead looked at use as one factor. This indicated that factors influencing the advanced use of e-Commerce was not fully understood. The second problem investigated the impact of the advanced use of e-Commerce on customer experience. This problem looked at increasing e-Commerce platform users. The research objectives, RO1 and RO2, were developed by highlighting the two research problems. RO1 examined factors influencing the advanced use of e-

commerce by individual users. RO2 examined the impact of the advanced use of e-commerce on customer experience.

Chapter 2 focused on the literature review, which allowed the study to introduce e-Commerce systems and the components of e-Commerce systems, how e-Commerce has evolved over the years, and identify use cases for e-Commerce platforms. The benefits of e-Commerce were discussed in detail, as well as the possible shortcomings and challenges users face with e-Commerce. The discussion around how end users understand the use of e-commerce increase the number of end users making use of e-commerce increase. Prior studies did not focus on splitting the use of e-commerce systems into basic and advanced use, so it was vital for this study to provide better insights into how the basic and advanced use of e-commerce affected end users. The Delone and Mclean model was introduced to the study, with the original Delone and Mclean IS success model being explained and understood in greater detail. An Adapted version of the Delone and Mclean model was introduced, which would be adapted to the study around the use of e-Commerce. Data Quality factors were added, the Use was divided into basic and advanced use, and the net benefits looked at customer experience in the adapted model.

Chapter 3 looked at the research approach that must be followed to ensure that the study could be recognized as a valid contribution to the research world. The research design was also understood in greater detail, with a survey being the method of choice, which included components that would provide more insights into end users and how the respondents understood and reacted to each factor listed in the study. The research instrument was developed in Chapter 3 based on the applicable factors, where past studies were used to help formulate the questions on each factor that formed part of the research instrument. The research instrument was loaded on Qualtrics, and the Qualtrics platform was used to conduct all surveys. The strategies to ensure that the data collected was

valid and feasible are also discussed and understood in this chapter, as well as the study's possible limitations and challenges.

In Chapter 4, the research findings are delved into and analysed to understand better how the research results need to be interpreted. The results from the research come from the respondents of the survey on Qualtrics. 159 respondents' responses, which included all constructs, were analysed, and subjected to tests of reliability and validity. The SEM model was used to test the models which were developed. The Data collected was analyzed through IBM SPSS and AMOS. In this chapter, the Data Quality factor was dropped during the PCA, as it did not load successfully. All the other factors loaded and showed a positive relationship with one another. One hypothesis did, however, show no relationship, which was System Quality's impact on User Satisfaction. The study showed that Information Quality, System Quality and Service Quality all positively affected the Advanced use of e-Commerce Platforms. The advanced use of e-Commerce also positively affected the customer experience of e-Commerce platforms. This chapter confirmed that both RO1 and RO2 was achievable objectives through the results of the data analysis.

Chapter 5 focused on interpreting the results of the research findings through the empirical results achieved in Chapter 4. The RO1 and RO2 were highlighted in this chapter, and three main relationships were discussed, which included "factors that influence the uses of e-Commerce platforms", "the use of e-Commerce systems and how it affects user satisfaction" and "factors that influence customer experience of e-Commerce systems". Throughout the chapter, all factors were investigated, and the dropped factor of Data Quality is mentioned, as well as there being no relationship between System Quality and User satisfaction. 13 out of 14 of the Hypotheses were approved and showed the positive influence that each factor has on the discussed relationships. The chapter concluded that RO1 and RO2 were achievable through the hypotheses

tested, and the hypotheses that were not approved did not negatively affect the outcome of the results.

6.3 Contributions to the study

In this study, the thesis was meant to add academic contributions to the study, which include a theoretical contribution, a Contextual contribution, a methodological contribution, and a practical contribution.

6.3.1 *Theoretical Contribution*

The theoretical contribution to this study started with the adaption of the Delone and Mclean IS Success model, where the original model considers Information Quality, System Quality and Service Quality(Delone & McLean, 2003). In addition to these factors, Data quality was introduced as an additional element to try and understand how existing data on e-Commerce systems could affect the uses of e-Commerce and User satisfaction. Previous studies did not include Data quality in the study of e-Commerce. However, in this study, Data quality did not load during the PCA, which resulted in the factor being dropped from the study and subsequently removed from the final model(Sharma et al., 2010).

Further to the addition to the original Delone and Mclean Model, the use factor was split into two elements looking at the advanced use of e-Commerce platforms. The study distinguishes between basic and advanced uses of e-Commerce platforms and how the users adopt e-Commerce platforms according to their use. This contribution helped understand how the different uses of e-Commerce platforms affect how end users would use e-Commerce platforms and whether it would make sense for businesses to implement e-Commerce platforms for businesses who want to improve customer experience. The study has shown that the basic and advanced use of e-commerce plays a vital role in the customer experience and user satisfaction of e-commerce platforms. The study did show

that the advanced use had a stronger relationship with customer experience than the basic use, which is a new contribution to the study on e-Commerce systems. Customers' ability to do basic functions like making purchases and paying online influenced the customer experience journey. Advanced uses like being able to have self-service tools and hyper-personalisation was identified as necessary. Future research should continue to differentiate between basic and advanced use, as understanding the e-Commerce system has increased in time (Rosário & Raimundo, 2021).

The final addition to the adapted Delone and Mclean model, which was used, was customer experience, the net benefit investigated (Farooq, 2019; Jaakkola et al., 2022; Meyer & Schwager, 2007). The customer experience factor focused on how customers enjoyed using the e-Commerce systems as well as if using e-Commerce platforms made the day-to-day activities more accessible to complete. Respondents reacted positively to the customer experience component, and there were strong correlations between the types of use and customer experience, as well as user satisfaction and customer experience. In future studies, customer experience should continue to be studied, and how the uses and the user satisfaction component can add additional value to the customer experience, as it may assist companies in understanding what end users would like to experience in order to adopt e-Commerce platforms into their day to day lives (Srivastava et al., 2021; Tiutiu & Dabija, 2023).

6.3.2 Contextual Contribution

The contextual contribution in this study was made by examining e-Commerce systems use on an individual level by end users of e-Commerce systems in retail in South Africa. The study provided an in-depth analysis and understanding of the different e-Commerce platform types. The study helps understand what basic and advanced features customers would typically like to see on the e-Commerce platform they would use. Features like being able to shop online and make online

payments for products and services which end users are shopping for are some of the most important features end users of e-commerce platforms would like to have access to with regards to the basic use of e-commerce, as identified in previous studies (Li, 2023; Saibaba, 2023). With regards to advanced features which affect the advanced use of e-Commerce systems, certain features such as hyper-personalization, chatbots, and personalized marketing were quite significant for respondents, and these are features that the end users would like to see implemented in an e-commerce platform. These advanced uses have been identified in past studies, which confirm the need for this functionality for end users to adopt e-commerce systems (Arumugam et al., 2020; Nuseir et al., 2023).

The study has confirmed that end users of e-commerce platforms have been positively affected by organisations' improvements in basic use and advanced uses of e-Commerce systems. Many customers have adopted e-commerce platforms if the basic use is available (Amin et al., 2016), and if the advanced use of e-Commerce platforms is understood, there has been more use of e-Commerce platforms by end-users; hence, education around e-commerce platform features is key to the adoption of e-Commerce platforms as identified in other studies (Ali et al., 2017; Nuseir et al., 2023; Raval, 2021). Gaining more users on e-commerce platforms allows businesses to expand their footprint and allows for a broader target audience concerning a brand or organisation (Gramling et al., 2021).

Future studies should continue to look at the uses of e-Commerce to understand how it can affect customer experience in both a positive and a negative manner.

6.3.3 *Practical Contribution*

By conducting this study, the results will help organisations understand what individual end users of e-Commerce platforms, also referred to as customers, would like to experience when using e-Commerce platforms. This will help companies make educated decisions when investing in the e-Commerce platform

functionality and what features would be necessary for the basic and the advanced use of e-Commerce. The study will also allow organisations to understand how to improve customer experience on e-Commerce platforms based on the survey respondents' feedback.

The results of this study indicated that both the basic use and the advanced use of e-Commerce systems play an important role in customer experience, and future research can help build a strong differentiation between the different uses of e-Commerce and where organisations should focus on e-Commerce systems become more mature(Raunaque et al., 2016). Furthermore, organisations will also be able to see the importance of information quality, system quality, and service quality in using e-commerce systems.

Practitioners looking to implement e-Commerce in the retail sector in South Africa can benefit from this study, as it provides insights into what positively influences customer experience, user satisfaction and the uses of e-Commerce. Future researchers should continue to include these dimensions, as they will help differentiate and understand the uses and the level of impact they may have on e-Commerce.

6.4 Limitation and Recommendations

This section has looked at the study's limitations and future recommendations for research that future researchers conduct.

6.4.1 Limitations

This study has numerous limitations which can be identified, with one of the first limitations being the fact that data was collected on an individual end-user level, where end users were expected to understand the basic and advanced use based on the questions which cause causal inference(Gao et al., 2022). Therefore, when looking at RO1, respondents may not have fully understood the

importance of Advanced use, which may have resulted in the lower scores versus the basic use (Boland & Lyytinen, 2004). Another limitation that can be identified is the time limit for respondents to respond to the survey published on LinkedIn, which could have resulted in a lower response rate than initially expected in the study. The study is also cross-sectional and not longitudinal. The study also only focused on the retail sector in South Africa, but e-Commerce is an IS being implemented in many different industries, and some respondents may have had a bias against the industry they may have responded against (Edwards et al., 2016).

6.4.2 Future research

A recommendation for future research, which will be conducted on e-Commerce systems, would be to continue distinguishing between the basic use and the advanced use of the e-Commerce systems for end users and the benefits that may be found for organisations. Future studies should continue investigating basic and advanced use and possibly how basic use could help improve the advanced use of e-Commerce platforms. The adoption of e-Commerce will increase over time, so understanding the uses that contribute to customer experience will be vital to continue understanding the evolution of e-Commerce platforms.

This study does not focus on the dissatisfaction of end users, but this provides an excellent research opportunity to understand what deters end users of e-commerce platforms from using the respective platform. It will also allow organisations to understand the hygiene factors of e-Commerce platforms, which need attention to help increase the adoption of e-Commerce platforms.

The final recommendation on future research that can be conducted would be on an organisational level, and it would be important to understand what organisations would like to benefit from implementing e-Commerce systems as a sales channel. An increase in revenue would be one of the benefits that an

organisation would want to realise with the implementation of e-Commerce systems, but other benefits would need to be unpacked and understood in greater detail, as well as the factors contributing to making these benefits a reality.

6.5 Conclusion

This study contributed an extended Delone and Mclean IS success model, which focused on e-Commerce Systems through data collection in the form of surveys distributed over LinkedIn to the researchers' connections and followers. The study's main two objectives were: RO1 examined factors influencing the advanced use of e-commerce by individual users. RO2 examined the impact of the advanced use of e-commerce on customer experience. These research objectives were achieved through the empirical results analysed, tested, and investigated in depth. Information Quality, System Quality and Service quality are vital for the advanced use of e-Commerce to be successful and continuous improvement on these items will create a better user experience. Wholistically, the advanced use of e-Commerce systems directly impacts Customer Experience in e-Commerce in the retail sector in South Africa.

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APPENDIX A

Dear Participant,

My name is Jaroshen Naidoo, and I am enrolled for a master's in management in the field of Digital business at the University of Witwatersrand. I am currently completing my minor dissertation through the supervision of Dr Norman Mudau.

My research topic is “The impact of advanced use of e-Commerce on customer experience.”

This study examines the basic and advanced use of e-Commerce in retail and how it affects customer experience. Further to this, the importance of how Data Quality affects the advanced use of e-Commerce will also be examined, you have been chosen to participate in this research because you have experience working with Information technology within an organisation.

You are a customer of e-Commerce. However, participation in this questionnaire is not mandatory, and you can withdraw at any stage. The data collected will be kept confidential, and any information that might make it possible for people to identify you will not be shared with anyone. The consolidated input data would then be made public in the report. However, the organisation and participants' names will be kept anonymous.

Thank you for taking the time to participate in this survey. The questions will take approximately 10-12 minutes of your time to complete.

For any queries or any other info related to the outcomes of the study, please get in touch with me or my supervisor at the provided contact details below:

Jaroshen Naidoo

E-mail: jaroshennaidoo@yahoo.com or Mudauno1979@gmail.com

APPENDIX B: Survey Questions

The Survey is divided into two sections:

Part A: Demographic information

Part B: e-Commerce basic and advanced use

Part C: Customer Experience

This section answers questions about your demographic information, including your experience.

The survey is divided into three sections.

1. What is your highest qualification?

Grade 12 or Matric	
National Diploma	
Bachelor's Degree	
Honours	
Masters	
PhD	

Other (Specify)	
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2. Which e-Commerce platform do you use?

Takealot	
Superbalist	
Checkers 60	
eBay	
Amazon	
Ali Express	
Pick n Pay Express.	
Woolworths	
Other (please specify)	

3. Please select the number of years you have used e-Commerce

<5 years	
6 – 10 years	
11 – 15 years	
>16 years	

Part B: Use of e-Commerce

The purpose of this section is to obtain your perceptions about the use of e-Commerce.

Please indicate the extent to which you agree with each of the following statements related to using e-Commerce in your organisation. Please indicate whether you Strongly disagree, mostly disagree, Disagree, are Neutral, Agree, mostly agree, or Strongly Agree with each statement.

No	Statements	Strongly Disagree	Mostly Disagree	Disagree	Neutral	Agree	Mostly Agree	Strongly Agree
IQ1	Data output by the E-Commerce System is described in a useful format	1	2	3	4	5	6	7

No	Statements	Strongly Disagree	Mostly Disagree	Disagree	Neutral	Agree	Mostly Agree	Strongly Agree
IQ2	Data output by the E-Commerce System is correct	1	2	3	4	5	6	7
IQ3	Data output supplied by the E-Commerce System is easy to comprehend	1	2	3	4	5	6	7
IQ4	Data output supplied by the E-Commerce System meets my requirements	1	2	3	4	5	6	7
IQ5	Data output supplied by the E-Commerce System is appropriate	1	2	3	4	5	6	7
IQ6	Data output supplied by the E-Commerce System is complete, with no need to rely on other systems	1	2	3	4	5	6	7

No	Statements	Strongly Disagree	Mostly Disagree	Disagree	Neutral	Agree	Mostly Agree	Strongly Agree
IQ7	Data output supplied by e-Commerce systems is important and helpful for my work	1	2	3	4	5	6	7

No	Statements	Strongly Disagree	Mostly Disagree	Disagree	Neutral	Agree	Mostly Agree	Strongly Agree
SQ1	The E-Commerce System is available	1	2	3	4	5	6	7
SQ2	The E-Commerce System is straightforward to maneuver	1	2	3	4	5	6	7
SQ3	The reaction time of E-Commerce System is adequate	1	2	3	4	5	6	7
SQ4	The E-Commerce System is simple to use	1	2	3	4	5	6	7

No	Statements	Strongly Disagree	Mostly Disagree	Disagree	Neutral	Agree	Mostly Agree	Strongly Agree
SQ5	The E-Commerce System is convenient	1	2	3	4	5	6	7
SQ6	The E-Commerce System is reliable	1	2	3	4	5	6	7

No	Statements	Strongly Disagree	Mostly Disagree	Disagree	Neutral	Agree	Mostly Agree	Strongly Agree
S1Q 1	My companys E-Commerce System support team is always beneficial to me	1	2	3	4	5	6	7
S1Q 2	My companys E-Commerce System support team is responsive within a reasonable time	1	2	3	4	5	6	7
S1Q 3	My companys E-Commerce System support team is	1	2	3	4	5	6	7

No	Statements	Strongly Disagree	Mostly Disagree	Disagree	Neutral	Agree	Mostly Agree	Strongly Agree
	committed to resolving my system disputes							
S1Q 4	My companys E-Commerce System support team responded to my request promptly	1	2	3	4	5	6	7
S1Q 5	With the support that I have obtained, I believe I can now use the E-Commerce System with confidence	1	2	3	4	5	6	7

No	Statements	Strongly Disagree	Mostly Disagree	Disagree	Neutral	Agree	Mostly Agree	Strongly Agree
DQ1	Data entered into records to the system are always complete	1	2	3	4	5	6	7

No	Statements	Strongly Disagree	Mostly Disagree	Disagree	Neutral	Agree	Mostly Agree	Strongly Agree
DQ2	Data records within the system are on no occasion missing	1	2	3	4	5	6	7
DQ3	Data records within the system are always accurate	1	2	3	4	5	6	7

No	Statements	Never	Very Rarely	Rarely	Occasionally/Sometimes	Often	Very Often
BU1	Running existing reports	1	2	3	4	5	6
BU2	Executing existing queries	1	2	3	4	5	6
BU3	Being able to sell	1	2	3	4	5	6
BU4	Being able to buy	1	2	3	4	5	6
BU5	Accessing stock availability	1	2	3	4	5	6
BU6	Basic product searches	1	2	3	4	5	6

No	Statements	Never	Very Rarely	Rarely	Occasionally/Sometimes	Often	Very Often
BU7	Comparing products	1	2	3	4	5	6
BU8	Making online payments	1	2	3	4	5	6

No	Statements	Never	Very Rarely	Rarely	Occasionally/Sometimes	Often	Very Often
AU1	Self-service tools	1	2	3	4	5	6
AU2	Interactive visualisation	1	2	3	4	5	6
AU3	Blockchain integration	1	2	3	4	5	6
AU4	Numerous payment methods	1	2	3	4	5	6
AU5	Hyper-personalisation	1	2	3	4	5	6
AU6	Constructing my queries	1	2	3	4	5	6
AU7	Sales forecasting	1	2	3	4	5	6

No	Statements	Never	Very Rarely	Rarely	Occasionally/ Sometimes	Often	Very Often
AU8	AR/VR integration	1	2	3	4	5	6
AU9	Pre-release orders	1	2	3	4	5	6
AU10	Personalised marketing	1	2	3	4	5	6
AU11	Chatbots	1	2	3	4	5	6
AU12	Optimisation	1	2	3	4	5	6

No	Statements	Strongly Disagree	Mostly Disagree	Disagree	Neutral	Agree	Mostly Agree	Strongly Agree
US1	I like utilizing the e-Commerce system	1	2	3	4	5	6	7
US2	I would endorse the E-Commerce System to other customers	1	2	3	4	5	6	7

No	Statements	Strongly Disagree	Mostly Disagree	Disagree	Neutral	Agree	Mostly Agree	Strongly Agree
US3	The E-Commerce System works the way I need it to work	1	2	3	4	5	6	7
US4	It is pleasing to use the e-Commerce system	1	2	3	4	5	6	7
US5	Overall, I am pleased with the e-Commerce system	1	2	3	4	5	6	7

Part C: Customer Experience

This section aims to obtain your opinion on customer experience. Please indicate the extent to which you agree with each of the following statements related to how the organisation has performed relative to the expectations it has set for itself.

No	Statements	Much worse than expected	Worse than expected	Somewhat worse than expected	Neutral	Somewhat better than expected	Better than expected	Much better than expected
CE1	Using the E-Commerce System expands my job performance	1	2	3	4	5	6	7
CE2	Using the E-Commerce System improves my work productivity	1	2	3	4	5	6	7
CE3	Using the E-Commerce System boosts my effectiveness in my job	1	2	3	4	5	6	7
CE4	Using the E-Commerce System improves my decision-making excellence	1	2	3	4	5	6	7
CE5	Using the E-Commerce System assists me to identify possible problems faster.	1	2	3	4	5	6	7

No	Statements	Much worse than expected	Worse than expected	Somewhat worse than expected	Neutral	Somewhat better than expected	Better than expected	Much better than expected
CE6	Using E-Commerce System assist me in making results quicker	1	2	3	4	5	6	7
CE7	Using E-Commerce System assist me to spend fewer minutes in meetings	1	2	3	4	5	6	7