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The influence of perceived risk, trust and security on the online shopping behaviour: A South African perspective

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ABSTRACT

The Online Retail in South Africa 2022 study conducted by World Wide Worx and MasterCard reveals a 30% growth in online retail in South Africa. This brings the total value of online retail in South Africa to R55 billion. It follows 40% growth in the previous year, which resulted in a total of R42,3 billion in 2021 (Worx, 2022)**.** Based on this result, it can be concluded that the growth of online retail stems not from an increase in consumer demand, but from a shift in consumers' purchasing behaviour from physical shops to online stores and apps (Worx, 2022). As a result of this fact, it is evident that South African e-commerce has made significant progress. Several studies have found that, in addition to other factors, consumers' perceptions of risk and trust influence their online shopping behaviour (Aseri, 2021). Therefore, this study needed to investigate the extent to which perceived risk, trust and security risk shape online shopping behaviour from a South African perspective. After confirming the survey instrument's psychometric properties, a conceptual model was created and tested. The hypothesis was tested using IBM SPSS 27 software. Along with a quantitative approach, a descriptive research method has been used in the current study. A structured tool was initially used to collect 262 responses, but after carefully examining the data, only 242 reliable responses were used for the model's analysis and evaluation. The research employs descriptive analysis, correlation analysis, multiple regression analysis, and path analysis. According to the findings, perceived ease of use (PEOU) and perceived usefulness (PU) have a positive influence on online shopping attitudes (SA). Furthermore, the findings show that online shopping attitude (SA) has a positive influence on online shopping persistence (SC). In addition, the moderation results reveal that the moderating variables Trust in E-commerce (TE), Perceived Risk (PR), and Perceived Security Protection (PSP)/ cybersecurity risk (CR) were significant and indicated that they would moderate the relationship between online Shopping Attitude and online Shopping Continuance. The results of the research yield helpful insights for retailers by giving them a comprehensive overview of the factors analysed in the study and explaining how they affect customers' online buying behaviour. In addition, this research includes an investigation of demographic characteristics and their impact on diverse factors. These findings will be beneficial to retailers as they discern the attitudes of different demographics concerning e-commerce.

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KEYWORDS

Online Shopping Behaviour, Online Shopping Continuance, Perceived Risk, Trust, Security, E-commerce, Covid Impact

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DECLARATION

I, **Mthokozisi Hlatshwayo**, declare that this research report entitled "*The influence of perceived risk, trust and security on the online shopping behaviour: A South African perspective"* is my work. I have acknowledged, attributed, and referenced all ideas sourced elsewhere. I am hereby submitting for the fulfilment of the requirements of the degree of Master of BCA01 Master of Management at the University of the Witwatersrand, Johannesburg. I have not submitted this report before for any other degree or examination to any other institution.

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C2 General

TABLE OF CONTENTS

Abstract **2**

KEYWORDS 3

DECLARATION **4**

LIST OF TABLES **8**

LIST OF FIGURES **9**

LIST OF ABBREVIATIONS AND ACRONYMS **10**

ACKNOWLEDGEMENTS **11**

CHAPTER 1. INTRODUCTION **12**

1.1 PURPOSE OF THE STUDY 13
1.2 BACKGROUND OF THE STUDY 13
1.3 RESEARCH PROBLEM 15
1.4 RESEARCH OBJECTIVES 18
1.5 SIGNIFICANCE OF THE STUDY 18
1.6 DELIMITATIONS OF THE STUDY 20
1.7 DEFINITION OF TERMS 21
1.8 ASSUMPTION 22
1.9 CHAPTER OUTLINE 22

CHAPTER 2. LITERATURE REVIEW **23**

2.1 INTRODUCTION 23
2.2 DEFINITION OF THE TOPIC OR BACKGROUND DISCUSSION 23
2.2.1 THE INTERNET 24
2.2.2 E-COMMERCE 25
2.2.3 TRUST 26
2.2.4 RISK 27
2.2.5 RELATIONSHIP BETWEEN TRUST AND RISK 27
2.2.6 SECURITY AND PRIVACY RISK IN E-COMMERCE 28
2.3 THEORETICAL FRAMEWORK 28
2.3.1 UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY (UTAUT) 29
2.3.2 TECHNOLOGY ACCEPTANCE MODEL (TAM) 33
2.3.3 THEORY OF PLANNED BEHAVIOUR (TPB) 35
2.4 CONCEPTUAL FRAMEWORK: 36
2.5 HYPOTHESIS DEVELOPMENT 37

C2 General

2.7 Chapter Conclusion 45

CHAPTER 3. RESEARCH METHODOLOGY 47

3.1 Research approach 47
3.2 Research design 48
3.3 Data-collection methods 49
3.3.1 Scale and Data Collection Items 50
3.4 Population and sample 50
3.4.1 Sample and sampling method 50
3.4.2 Demographics of participants 51
3.5 Data analysis and interpretation 51
3.5.1 Data and information processing 52
3.5.2 Quantitative methods for data analysis 53
3.6 Validity and reliability 54
3.6.1 Validity of the study 54
3.6.2 Reliability of the study 55
3.7 Demographic profile of the participants 56
3.8 Ethical considerations 56

CHAPTER 4. PRESENTATION OF RESULTS 58

4.1 Descriptive Statistics: 58
4.1.1 Demographic information 58
4.2 Determine the validity of the study 60
4.3 Determining the reliability of the study 62
4.4 Statistical hypothesis testing between variables 63
4.4.1 Results and analysis for hypotheses 64
4.5 Summary of the results 69

CHAPTER 5. DISCUSSION OF RESULTS 71

5.1 Introduction 71
5.2 Discussion related to Hypotheses 71
5.2.1 Perceived Ease of Use (PEOU) 72
5.2.2 Perceived Usefulness (PU) 73
5.2.3 Perceived Risk (PR) 73
5.2.4 Trust in E-commerce (TE) 74
5.2.5 Perceived Security Protection 75

CHAPTER 6. CONCLUSIONS AND RECOMMENDATIONS 77

6.1 Introduction 77
6.2 Conclusions for Research Objectives 78
6.3 Recommendations 80
6.4 Suggestions for future research 82

C2 General

References **83**

APPENDIX A. CONSISTENCY MATRIX **89**

APPENDIX B. ONLINE QUESTIONNAIRE **90**

APPENDIX C. ONLINE INTERVIEW INFORMATION SHEET **93**

APPENDIX D: PARTICIPANT CONSENT FORM **94**

APPENDIX E. ETHICS CLEARANCE CERTIFICATE **96**

APPENDIX F. TURN-IT-IN **97**

C2 General

LIST OF TABLES

Table 1: Theories and models used in the user acceptance model..... 30

Table 2: Descriptions of concepts in UTAUT..... 31

Table 3: Descriptions of new constructs UTAUT2..... 32

Table 4: Explanation of Each Construct 37

Table 5: Summary of the Hypotheses for this Study 44

Table 6: Demographic Information 58

Table 7: Average Variance Extracted and Composite Reliability..... 61

Table 8: Statistics and Correlations of Constructs..... 61

Table 9: Statistics and Correlations of Constructs..... 62

Table 10: Reliability and Convergent Validity Tests 63

Table 11: Multiple Linear Regression 66

Table 12: Recap of the Multiple Linear Regression..... 68

Table 13: High-level Summary of Hypotheses Results in..... 70

Table14: Consistency Table: Research Questions, Propositions, Data Collection, and Data Analysis 89

C2 General

LIST OF FIGURES

Figure 1.1: Overview of the Survey 20

Figure 2: Overview of the Literature Review.....23

Figure 2.3: Unified Theory of Acceptance and Use of Technology (UTAUT) 29

Figure 2.4: Unified Theory of Acceptance and Use of Technology (UTAUT2) 31

Figure 2.5: Technology Acceptance Model 33

Figure 2.6: Theory of Planned Behaviour.....35

Figure 2.7: Proposed Research Model for this Study.....37

Figure 4.8: Normal P-P Plot of Regression Standardised Residuals.....67

Figure 4.9: Histogram of Regression Standardised Residuals 67

C2 General

LIST OF ABBREVIATIONS AND ACRONYMS

AU	Actual System Use
AVE	Average Variance Extracted
BI	Behavioural Intention
CR	Composite Reliability
CR	Cybersecurity Risk
ECT	Electronic Communications and Transactions
ICASA	Independent Communications Authority of South Africa
PEOU	Perceived Ease of Use
PU	Perceived Usefulness
PR	Perceived Risk
PSP	Perceived Security Protection
TE	Trust in E-commerce
TRA	Theory of Reasons Action
TRB	Theory of Planned Behaviour
TAM	Technology Acceptance Model
SA	Shopping Attitude
SC	Shopping Continuance
UTAUT	Unified Theory of Acceptance and Use of Technology

C2 General

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C2 General

CHAPTER 1. INTRODUCTION

1.0 Introduction

As per Stats SA, online retail in South Africa grew by 2.8% in 2020, twice the rate in 2018 (Stats, 2021). Deloitte found that over 70% of South Africans shop online at least once a month (Deloitte, 2021). The reason for this growth can be attributed to the improvement of the online retail industry in South Africa, COVID-19 restrictions, and consumers shopping online from their comfort zone (Deloitte, 2021). According to the Deloitte (2021) report, clothing, gadgets, footwear, domestic devices, and well-being items are the most popular classes among South Africans shopping online (Shopify, 2022). Therefore, the reasons mentioned in the Deloitte report can be attributed to consumers' increasing trust in online channels. This is because trust reduces perceived risk and mitigates uncertainty. Kim et al. (2008) support this statement by stating that trust decreases risk, increases the perception of benefit or value, promotes loyalty, and promotes e-commerce participation. Moreover, El Ansary & Roushdy (2013) explained that trust, quality of e-commerce administration, attitudes towards web shopping and demographics of shoppers influence the online shopping behaviour of customers.

As a result of the introduction of web-based shopping, consumers have raised a few concerns, including assurance of quality products and inadequate data exposure as well as payment security issues. In South Africa, these concerns have grown because online merchants are not aware of the key risk factors affecting customers' attitudes and web-based shopping habits. As a result of consumers' concerns, VISA has realised that it is very important to simplify their web-based shopping process by implementing secure and reliable payment methods. Even so, South African online consumers remain sceptical of shopping online due to perceived risks, such as financial losses caused by fraudulent retailers, non-delivery of ordered products, security risks, and lack of product assessment before purchase (Makhitha & Ngobeni, 2021).

Perceived risk factors have been identified as influencing online shopping behaviour in previous studies. New studies should focus on other potential online shopping risk factors that may influence customers' attitudes and purchases,

C2 General

although some have suggested that studies should concentrate on other potential online shopping risk factors (Makhitha & Ngobeni, 2021).

1.1 Purpose of the study

The study was motivated by the need to investigate the risks, trust, and security associated with online shopping, which influence whether or not consumers will shop online. Hence, the purpose of this research was to investigate the effect of perceived risk, trust and security risk on online shopping behaviour in South Africa.

Furthermore, the study sought to examine previous studies for countries with well-developed internet marketing infrastructure and to assess how internet shopping trends in South Africa can be improved.

1.2 Background of the study

E-commerce or mobile commerce has grown rapidly in recent years due to rapid advances in communication and computer technology (Lake, 2019). A lack of access to the computer-based Internet significantly inhibits the growth of the e-commerce industry in developing countries (Dennis & Kahn, 2022). In the same manner, many South Africans do not know the cable and communication infrastructure of the European or American style. The majority of the population lacks fixed telephone lines, which makes access to the internet through a computer at home uncommon (Dennis & Kahn, 2022). Despite this, almost 90% of the country's population owns a smartphone (Arakpogun et al., 2020). Mobile phones, like fixed telephones in other developing African countries, are relatively common. According to market researchers, the majority of the continent can embrace e-commerce on a large scale without investing in developing significant e-commerce market penetration (Arakpogun et al., 2020). Mobile banking, location-based services, video telephones, and online media services have become readily available to smartphone users as a result of the sophisticated South African telecommunications infrastructure. Although these services are available, South Africans have been slow to adopt them (Arakpogun et al., 2020).

C2 General

E-commerce services are often not adopted by users because of a lack of trust among them. A strong sense of trust is essential even in situations considered risky by most people, and e-commerce entails potential vulnerabilities and risks for consumers (Carstens, Ungerer & Human, 2019). There is no trust built by building a relationship with the vendors delivering the products or services, for example (Makhitha & Ngobeni, 2021). The media has also exposed e-commerce retailers for unethical conduct in other instances (Malinga, 2020). In addition to technological complexity, users may face risks such as possible fraud, malicious activities, malware, phishing, and cybercrime (Lake, 2019). The South African government has attempted to mitigate these risks by providing users with legal protection; however, trust in the justice system is low (Makhitha & Ngobeni, 2020).

Online shopping has become increasingly popular among customers. In addition to bringing a wide range of retail products to potential customers, online shopping also provides several business opportunities and a tremendous market (Rachbini, 2018). Moreover, Gustavsson and Johansson (2006) noted that the Web gives customers more control over their lives, such as their information, communications, time, money, choices, and satisfaction. Items, services, methods, and styles of living that offer convenience and save time are in high demand (Gustavsson & Johansson, 2006). Taking online shopping as an example, it should be easy to access the website, it should be straightforward to navigate, and it should also be simple for the customer to purchase the items and services (Bianchi & Andrews, 2012). Nonetheless, individuals are often uncertain when faced with new technologies and ways of operating. As a result, trust has been seen as an important element (Gustavsson & Johansson, 2006). Several consumers have been discouraged from purchasing from internet vendors due to a lack of trust, perceived risks, and security concerns (Makhitha & Ngobeni, 2021). Despite various activities in the fields of law and security, consumers have not yet gained the trust necessary to purchase online or conduct online business (Petrovic, Ksela, Fallenbock & Kittl, 2003). Thus, internet vendors must promote trust and confidence online. According to Windham and Orton (2000), customers perceived security and privacy concerns as obstacles to e-commerce. The reason for this is that consumers prefer their personal information and identity to be kept confidential and protected against online fraud. Because of obscurity, distance, and the lack of

C2 General

physical interaction, e-commerce is perceived as riskier than physical commerce (Gustavsson & Johansson, 2006). As consumers still believe in touching things physically or trying them on before purchasing them, they prefer to do business with people or organizations they trust (Thakur & Srivastava, 2015).

Managing customers' trust, perceived risk, and security concerns in e-commerce, both online and offline, requires businesses to acquire more knowledge (Ivanov, 2012). Despite this, it is really difficult for online sellers to establish trust with their customers (Gustavsson & Johansson, 2006). Moreover, companies should understand customers' perceptions of risk when it comes to e-commerce since it influences their purchasing decisions. In other words, if a customer perceives a high level of risk, they are unlikely to buy a product online (Makhitha & Ngobeni, 2021). In this context, it would be interesting to examine the influence of perceived risk, trust, and security on online shopping behaviour in South Africa. The goal of researching relevant literature on consumer trust, potential threats, and safety on e-commerce sites is to identify critical constituents that can aid in building trust while purchasing items online and meeting consumers' safety expectations and concerns.

1.3 Research problem

It was estimated that the e-commerce sector in South Africa could increase the total retail market by 5.6 per cent by 2020 if its security, accessibility, reliability, delivery, and after-sales support were improved (Majola, 2021). According to the South African Digital Customer Experience (CX) Report of 2021 (Ahlfeldt, Reekie, & Stewart, 2021), 96 per cent of consumers would only increase their online spending if the online stores improved the shopping experience (i.e. cybersecurity threats, security of online shopping, etc.). Additionally, R30 billion was left on the table by e-tailers with poor CX - R12bn in CX concerns and R20.4bn in cart abandonment (Majola, 2021). According to the report, retailers could gain an additional R11.95bn in revenue by addressing the key customer experience issues (Ahlfeldt, Reekie, & Stewart, 2021). As a result of these consumer experience issues, the South African e-commerce sector is not growing or increasing its revenue as it should. This study is important to identify other factors that are

C2 General

affecting the e-commerce sector of South Africa, such as trust in online shopping, security and perceived risk.

The consuming issue and overarching research question are, how can these consumer experience issues be decreased for South Africa's e-commerce sector to develop? To address this, what framework is required to facilitate work toward developing a scientific method? To flourish in the e-commerce sector, it is critical to increase trust in e-commerce by ensuring that companies implement relevant consumer protection rules, protect personal data, and engage in international cooperation on e-commerce (Lianos & Botwright, 2019). Thus, this study aimed to examine how perceived risks, trust, and security influence online shopping behaviour in South Africa.

A previous study also suggested that the lack of physical signs like store appearances and physical interaction with sales consultants, makes building trust with consumers more challenging in the online environment. As a result, e-commerce presents a significant challenge for businesses (Gustavsson & Johansson, 2006). In this study, it was also crucial to identify factors that contribute to consumer trust in e-commerce and address security concerns.

In the context of online shopping, it is crucial to address the complex interplay between perceived risk, trust, and security, as these factors significantly influence consumer behaviour. Perceived risk, often a multifaceted concept, comprises sub-dimensions like financial risk, performance risk, privacy risk, and psychological risk. Trust, on the other hand, involves trust in the online retailer, the website, and the overall e-commerce system. Security encompasses both data security and transaction security.

While perceived risk and online security may share some underlying characteristics, they are fundamentally different constructs. Perceived risk represents the consumer's subjective assessment of potential negative outcomes and uncertainties associated with online shopping, whereas online security deals with the objective measures and technologies employed to safeguard data and transactions.

C2 General

Despite extensive research on each of these dimensions separately, there is a pressing need to comprehensively investigate how these elements interact and jointly affect consumers' decisions in the online shopping environment. More specifically, the gaps in our current understanding arise from the limited examination of the following:

1. **Interplay of Sub-Dimensions**: Understanding how the sub-dimensions of perceived risk (financial, performance, privacy, and psychological) interact with trust and security is underexplored. For example, what is the relationship between privacy risk and trust in an online retailer's data handling practices? How does financial risk perception influence the importance of transaction security?
2. **Moderating Factors:** Recognising the moderating factors that can influence the relationships among perceived risk, trust, and security is essential. For instance, the influence of consumer demographics, cultural factors, and experience levels on the impact of perceived risk, trust, and security in online shopping scenarios.
3. **Contextual Variations:** Online shopping environments are diverse, ranging from established e-commerce platforms to smaller, niche websites. Research should delve into how these contextual variations affect the interplay of perceived risk, trust, and security.
4. **Technological Advancements:** As technology evolves, so do the dynamics of perceived risk, trust, and security. Investigating how emerging technologies (e.g., AI, blockchain) impact these factors and whether they enhance or diminish consumer trust and security perceptions.

By addressing these gaps and exploring the intricate relationships among perceived risk, trust, and security, this research aims to provide a more nuanced understanding of how these dimensions collectively influence consumer behaviour in the online shopping context. Such insights can be invaluable for both academics and practitioners, helping to refine strategies for building trust, mitigating perceived risks, and enhancing online security, ultimately improving the online shopping experience for consumers.

C2 General

1.4 Research objectives

The goal of the study was to investigate the extent to which perceived risk, trust and security risk will shape online shopping behaviour from a South African perspective. To do this, the following objectives were set to guide the study:

i. To examine how Perceived Risk influences Trust.
i. To examine how South African consumers' risk perception and trust influence online shopping behaviour.
ii. To determine the security risk factors that influence consumers' attitudes towards online shopping in South Africa.
iii. To examine the mediation effect of online shopping attitude on the relationship between online shopping continuance, and PEOU on one hand and PU on the other.

1.5 Significance of the study

To make a significant contribution, a research study should primarily address the empirical and other gaps identified in a research area that create a research problem. Hence, the current study was to get a better understanding of the impact and factors of perceived risks (product risk and delivery risk), trust and security and privacy risks on the South African consumer's online shopping behaviour, attitude and buying intentions. As a result of these factors, the objective of this study was to examine how South African consumers perceive the factors that influence their decision to shop online.

According to studies, South African consumers are willing to increase their online spending if online stores improve the shopping experience (Ahlfeldt, Reekie, & Stewart, 2021). According to the survey conducted by Rogerwilco digital marketing agency in South Africa, three key issues commonly faced by South African consumers or barriers preventing them from increasing their online spending include delivery; credibility; and the overall experience -i.e. ease-of-use, security and privacy (Ahlfeldt, Reekie, & Stewart, 2021). As a result of these challenges, online stores lost R11.95bn in sales (Ahlfeldt, Reekie, & Stewart, 2021). Consequently, these challenges present an opportunity to examine and establish

C2 General

how online stores will respond to perceived risks, trust and security risks on South African consumers' online shopping behaviour and buying intentions. An overview of the survey responses is provided in Figure 1.1

The study's findings shed light on a fundamental aspect of online shopping behaviour in South Africa, highlighting the intricate interplay between trust, security, perceived risk, perceived ease of use, and perceived usefulness. These results underscore the critical role of trust as a linchpin in shaping and influencing online shopping continuity. Trust, in this context, serves as a pivotal factor that bridges the connections between various factors, ultimately impacting consumers' choices and behaviours in the realm of online shopping.

This revelation not only confirms the importance of trust but also emphasizes its central role in driving online shopping behaviour within the South African context. Establishing and nurturing trust between online shoppers and e-commerce platforms, retailers, or service providers emerges as a strategic imperative. By addressing and enhancing trustworthiness, businesses can pave the way for a more favourable online shopping experience, fostering increased customer satisfaction and loyalty. The significance of these findings extends beyond academic interest, as they offer actionable insights for businesses and policymakers seeking to harness the potential of the digital marketplace in South Africa.

By acknowledging the significance of trust in online shopping, stakeholders can make informed decisions, implement targeted strategies, and develop policies aimed at not only bolstering trust but also fostering a thriving and sustainable e-commerce ecosystem in South Africa. These insights underscore the practical value of this study for those invested in the growth and success of online retail within the region.

C2 General

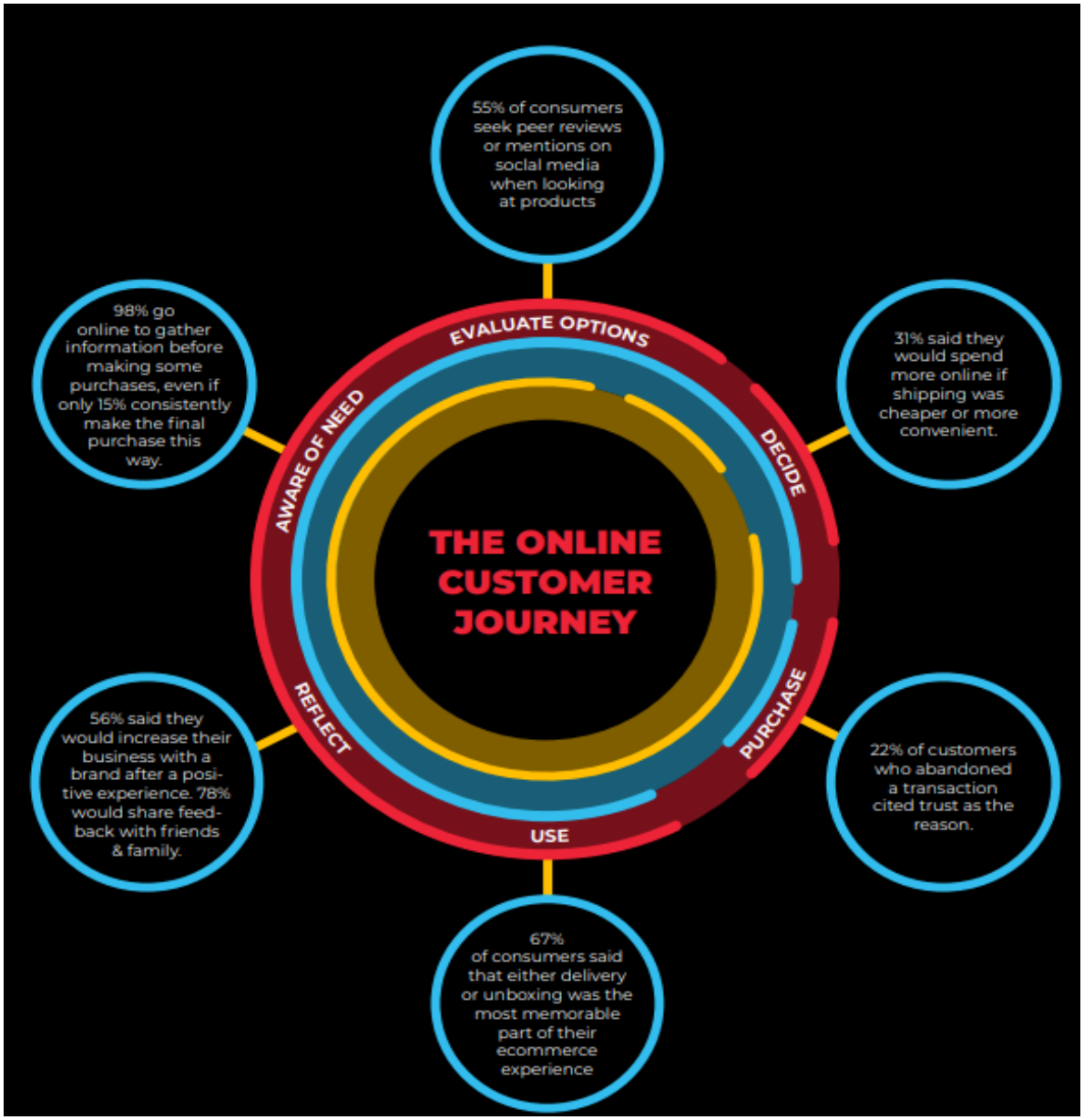

Figure 1.1: Overview of the Survey

Source: The 2021 South African Digital Customer Experience Report

1.6 Delimitations of the study

The study was limited to online shoppers in the age category of 18 years and above in South Africa. In addition, the study focused on Business-to-Consumer e-commerce, where the limitation looked at consumer perceived risk, trust and security of online shopping or in e-commerce.

C2 General

1.7 Definition of terms

The key terms used in this research report are defined below.

E-commerce	refers to the communication and transmission of business information through computers and networks, specifically the purchase and sale of goods and services online, as well as the funds' transfer via digital means such as mobile phones and internet connections (Hutt & Speh, 2004, p.119).
Perceived Risk	refers to the feeling of uncertainty that a buyer feels when he or she is about to buy a product, usually, one that is expensive, like a house, a car, or a workstation. If a buyer is contemplating the purchase of a product, he or she has some uncertainty about the product in question, especially if the item in question is very expensive (Lake, 2019).
The internet	is an enormous network, which one could say allows computers across the globe to communicate with one another when they're on the internet. Using an Internet connection and a computer, individuals can share data and communicate with each other around the world with the help of the Internet (Dennis & Kahn, 2022).
Trust	is a multi-faceted concept that is influenced by various factors such as trust in organizations, trust in suppliers, trust in the actual systems or products, and even trust in individuals as per their personalities or dispositions. All of these come together to shape how a person discerns and extends trust. According to Johnson and Grayson (2005), a trust formed based on institutional frameworks is established on the trustor's conviction in the effectiveness of designated structures to handle specific situations proficiently.
Cybersecurity	uses technologies, processes, and practices designed to make sure an organization's confidential information and its

C2 General

intellectual property are protected from unauthorised access by people who might commit cybercrimes. (Tunggal, 2022).

1.8 Assumption

- No questions were skipped by any of the participants who received the survey.
- The respondents had sufficient knowledge of online purchasing processes.
- The survey respondents responded objectively and fairly, without interference from the researcher.

1.9 Chapter outline

Chapter 1 articulates the overall view of the research study along with the purpose of the study, its background, the research problem and the research questions addressed by the study.

Chapter 2 presents the literature reviewed to establish the theoretical background of e-commerce and the Internet. Subsequently, the field of consumer-perceived risk, trust and security and privacy risk in e-commerce will be discussed.

Chapter 3 presents the research methodology that was used to answer the research objectives of this study. A description of the research method used in this study and why it was selected over other methods from the literature is provided in this chapter.

Chapter 4 presents the results obtained from the investigation of the primary and secondary data collected and analysed. Firstly, secondary data sources were examined to gain a better understanding of the current state of development of online shopping behaviour in South Africa. Secondly, the findings from the primary data obtained from South African online shoppers are presented.

Chapter 5 presents a discussion of the findings, about the research hypotheses drawn up for this study.

Chapter 6 presents the conclusions drawn from the study and recommendations for South African consumers in the e-commerce environment.

C2 General

CHAPTER 2. LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature reviewed to establish the theoretical background of e-commerce and the Internet. Subsequently, the field of consumer-perceived risk, trust and security and privacy risk in e-commerce will be discussed. An overview of the literature reviewed is provided in Figure 2.

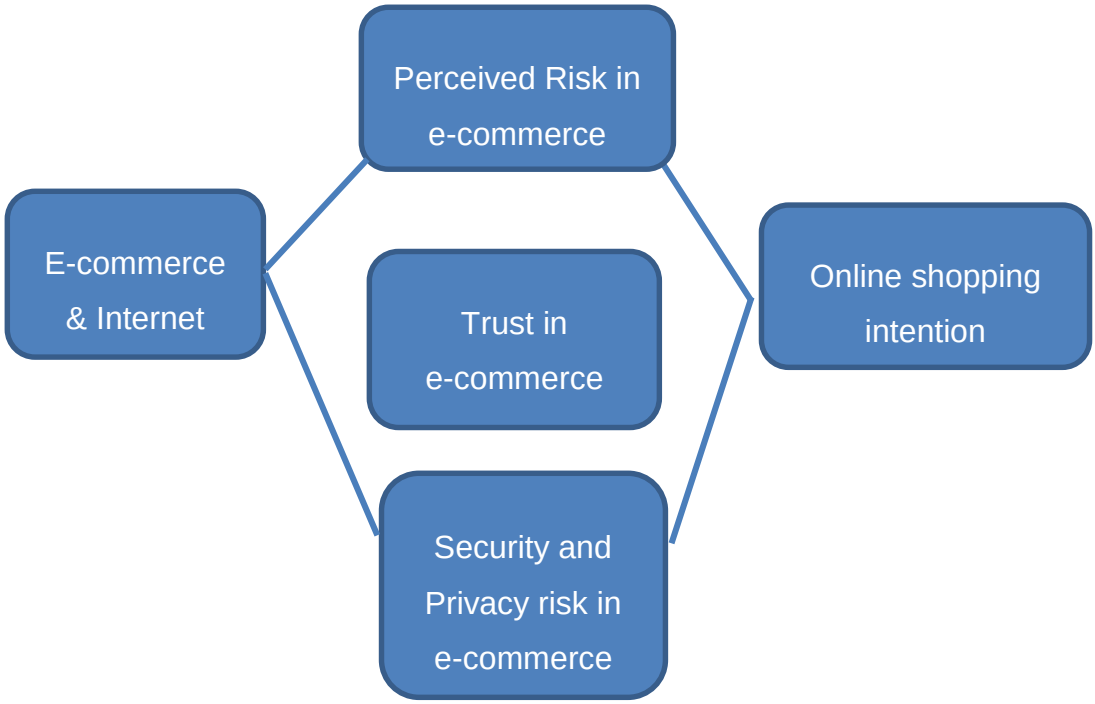

Figure 2: Overview of the Literature Review

2.2 Definition of the topic or background discussion

As a result of technological advancements and the rise of the Internet and the World Wide Web (www) over the last two decades, a new concept known as "e-commerce" has emerged (Ivanov, 2012). Since then, several businesses have been reshaped as a result of the rapid development of e-commerce over the last couple of years. The changes that e-commerce is bringing in the

C2 General

marketplace and how business is being directed will never be the same again as a result of its emergence (Chong, 2008).

There has been a consistent expansion in the significance of online shopping research since it was first introduced about 15 years ago, and today online business is regarded as a promising method of achieving organisations' goals by reaching customers online (Chong, 2008). Meanwhile, there are still some biases and negative effects that prevent the adoption of online business practices. The adoption of online business has a direct effect on South African consumers' shopping behaviour which is the target of this study. Before starting to investigate the effect of perceived risk, trust, security and privacy risk on online shopping behaviour, an explanation of the meaning of the internet, e-commerce, trust and risk as indicated by various studies is given.

2.2.1 The Internet

The Internet is an enormous network, which one could say allows computers across the globe to communicate with one another when they're on the Internet. Using an Internet connection and a computer, individuals can share data and communicate with each other around the world with the help of the Internet (Dennis & Kahn, 2022). Despite the ease of communication between people, users of the Internet are being faced with more and more uncertainties, such as whether they can trust the Internet or not. Hence, online businesses should build trust and confidence among their clients so that they can cultivate a sense of trust on the Internet.

The ARPANET network (Advanced Research Projects Agency Network) was one of the prototypes of the Internet that was created by Robert W. Taylor in the 1960s (Chong, 2008). Several different technologies have been developed by different organisations and individuals over the years. A good example of this is the Transmission Control Protocol (TCP) and Internet Protocol (IP) technologies, which were developed by Vinton Cerf and Robert Kahn.

There are many various things that are done over the Internet today in many different parts of the world. A good example would be the use of the Internet by

C2 General

consumers who have access to the Internet to shop online as well as to communicate with their sellers. However, with the introduction of the Internet, a wide variety of new methods of manipulation have become available, such as social engineering, cyberbullying, and many other kinds of security breaches (Dennis & Kahn, 2022). Thus, online businesses must assure consumers that they can enjoy a secure online shopping experience. Various industries have collected a great deal of data from consumers, which some deem as a violation of their right to privacy. Despite security precautions, it would be possible for consumers' personal information to fall into the wrong hands, leading to financial loss and identity theft (Makhitha & Ngobeni, 2020). (Makhitha & Ngobeni, 2020). Online businesses should be user-friendly and secure. Then, consumers will trust online shopping as a result. Consequently, e-commerce will probably become one of the most common methods of shopping (El-Ansary & Roushdy, 2013).

2.2.2 E-commerce

Since its inception, e-commerce has emerged as a platform that provides media and unique services unavailable in the real world, as well as functionality that cannot be found anywhere else (Laudon & Traver, 2017). The way people conduct business in the marketplace has been transformed by the impact of e-commerce. Furthermore, Laudon and Traver (2017) state that e-commerce has created new advanced markets where consumers are not subject to hidden costs, markets are global, and online shopping is not always simple. Businesses worldwide must rethink security, privacy, and intellectual property as e-commerce is impossible without the Internet. For example, e-commerce is challenging Amazon, Facebook, and others who maintain profiles of millions of consumers around the world to protect consumer privacy. So, what is E-commerce?

Due to several e-commerce publications in the past few years, numerous authors developed various definitions of e-commerce. For instance, e-commerce as defined by Rainer and Cegielski (2011), involves the purchase, transmission, sale, or trading of goods and services through an electronic network, primarily the Internet. Usually these deals are business-to-business (B2B), business-to-customer (B2C), consumer-to-consumer (C2C), business-to-government

C2 General

(B2G) or purchaser-to-business. Online business and e-business are frequently used interchangeably. For this study, the definition developed by Hutt and Speh (2004), will be adopted, i.e. “involves business communications and transmissions over networks and through computers, specifically the buying and selling of goods and services, and the transfer of funds through digital communications”. So now how does the concept “Trust and Risk” fit in e-commerce?

2.2.3 Trust

Trust is a multi-faceted concept that's influenced by various factors such as trust in organizations, trust in suppliers, trust in the actual systems or products, and even trust in individuals as per their personalities or dispositions. All of these come together to shape how a person discerns and extends trust. According to Johnson and Grayson (2005), a trust formed based on institutional frameworks is established on the trustor's conviction in the effectiveness of designated structures to handle specific situations proficiently. According to various research, the extent of trust in a particular institution can considerably impact the level of trust in online surroundings (Vance et al., 2008). It pertains to regulations, laws, and establishments. ICASA, which is the primary regulator in the telecommunications sector, oversees the industry and is responsible for addressing any complaints raised by users (Shava, 2021). In addition, the Electronic Communications and Transactions Act (ECT) is the legal framework in charge of user protection in South Africa. Even though there are strict regulations, very few websites based in South Africa fully abide by the rules outlined in the ECT Act. Customers' vendor trust is the belief they hold in a company's aptitude to expertly fulfil their contractual obligations, despite challenging or uncertain circumstances. System trust is the ability to put faith in technology and judge its dependability based on extensive knowledge. According to mobile operators, using a mobile phone to conduct a financial transaction is safer than using a traditional method like a credit card or debit card. However, the belief is not shared by users, as protecting the security of their payments is crucially important to them (Makhitha & Ngobeni, 2021). A consumer's tendency to trust and rely on vendors can be determined by their level of trustworthiness. Every customer has a unique quality that is unique to them and not shared by any other customer. In order to influence a customer's decision-

C2 General

making process, which is inevitably shaped by societal expectations, it is crucial to conduct a rational assessment of reliability and morality.

2.2.4 Risk

Trust is relevant in uncertain and risky situations when there requires a decision to be made involving risks. According to Carstens, Ungerer and Human (2019), trust always involves risk since trusting essentially translates to being vulnerable to the trustee. In e-commerce, researchers have observed that an increased degree of trust reduces the perception of uncertainty and risks of the trustee and impacts their behaviour and willingness to buy or avail of the services or products. It is not a risk but trust, perceived by consumers in cases of low-risk purchases like ringtone downloads or movie downloads influencing the customer's decision to participate in e-commerce purchases. However, during high-involvement purchases, risks become highlighted and more prominent and trust acts as a secondary part in reducing the risk rather than influencing the customer's purchase decision.

2.2.5 Relationship between trust and risk

Three types of trust and risk models have been identified by Gefen et al. (2003), which are the mediating relationship, moderating relationship and threshold relationship. The mediating relationship involves trust being hypothesized into impacting perceived risks, which in turn impacts behaviours. The presence of trust reduces risks and increases the chances of participation in e-commerce. Thus, mediating relationships convey a straightforward, causal relationship between risk and trust.

The moderating relationship implies that the impact of trust on consumer behaviour varies depending upon the degree of risk, that is, whether it is a high or a low-risk situation. Trust being high, risk will make less impact on consumer behaviour. In high-risk situations, like in mobile banking, trust shared by the truster and trustee becomes higher than in low-risk situations.

C2 General

The threshold approach considers risk and trust as two separate perceptions. The higher the perception of risk that the trust, the lower the chances of e-commerce engagement of the truster. This model is based on the decision-making process of the truster, where the truster assesses every situation and risk about them before purchasing.

2.2.6 Security and Privacy risk in e-commerce

As per Phelps et al. (2000), data protection is the greatest security concern. In addition, Dai and Chen (2015) indicated that security breaches can put customers' private data and financials in extraordinary danger, resulting in identity theft and financial loss. Several studies have suggested that customers are vulnerable when using online payment systems. According to Makhitha and Ngobeni (2021), security and privacy risks are the most important elements that influence customers' online shopping decisions. Thus, some consumers will not purchase online if they are more concerned with privacy and security risks. Thakur and Srivastava (2015) suggested that the misuse of customer data may be the primary cause of customers not shopping online. This issue can be resolved if e-commerce businesses provide customers with privacy policies that explain how and why they intend to use customer information, information elements, purposes of use, commitments, and conditions (Vasileiadis, 2015). Security and privacy are often confused by consumers. Thus, Joseph et al. (2012) recommend that a legislative guideline be made or enhanced to address current privacy issues.

2.3 Theoretical framework

In developing a theoretical framework for the study, the work of several authors in the field of trust, perceived risk, and security in e-commerce has been considered. Understanding the relationships between consumer perceptions of risk and trust as well as the attitude toward online purchasing at an e-commerce platform is vital (Verhagen, Meents, & Tan, 2006).

The following theoretical frameworks were considered for this study:

C2 General

- (Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, 2003) Unified Theory of Acceptance and Use of Technology (UTAUT) theoretical structure underpins the theory for this study. UTAUT is a key instrument used by researchers to measure elements that impact user attitudes or behaviour towards the adoption and acceptance of different technologies (for example: e-commerce), a key factor in this research.

- (Davis,1986) The Technology Acceptance Model (TAM) is deemed an appropriate theoretical framework to provide a basis for tracing the impact of external factors on internal beliefs, attitudes, and intentions.

2.3.1 Unified Theory of Acceptance and Use of Technology (UTAUT)

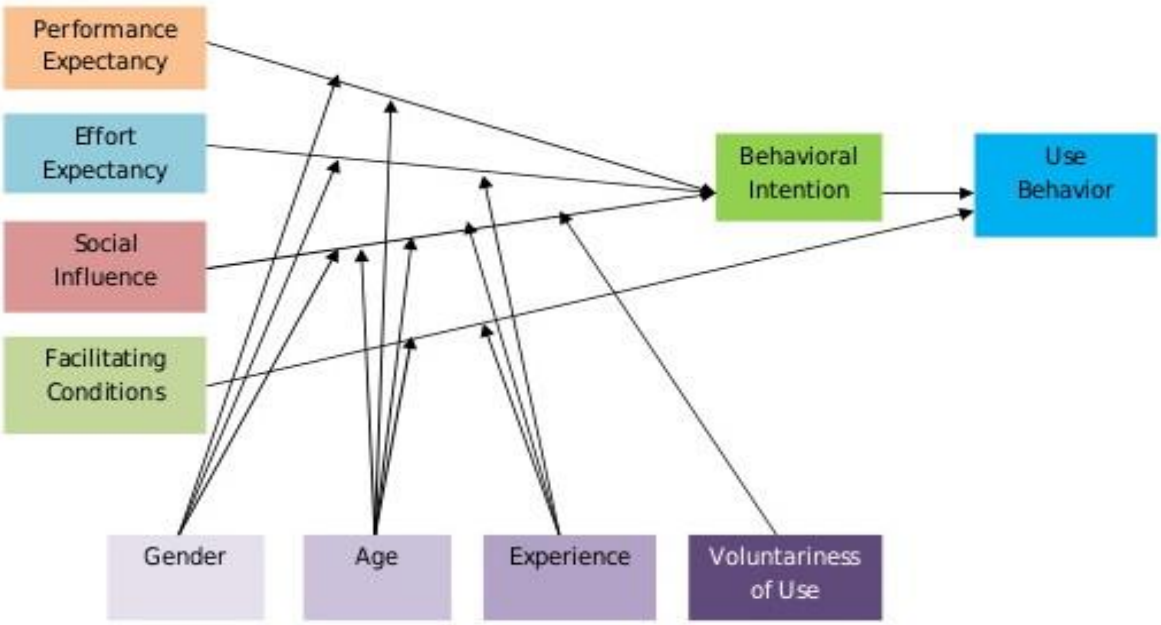

Figure 2.3: Unified Theory of Acceptance and Use of Technology (UTAUT)

The UTAUT (Venkatesh et al., 2003) theoretical framework supports this study. The UTAUT framework has been used as an instrument by researchers to determine user attitudes or behaviour towards the adoption and acceptance of different technologies in the context of e-commerce/ m-commerce adoption (Williams et al., 2014). UTAUT model was developed by Venkatesh et al (2003) after he evaluated eight existing theories or models used in technology acceptance (Imtiaz, 2018).

C2 General

Table 1: Theories and models used in the user acceptance model

Theories/Models	Authors
The theory of reasoned action (TRA)	(Fishbein & Ajzen, 1975)
The technology acceptance model (TAM)	(Davis, 1989)
Social cognitive theory (SCT)	(Bandura, 1986)
Innovation diffusion theory (IDT)	(Moore & Benbasat, 1991)
The theory of planned behavior (TPB)	(Ajzen, 1991)
The model of PC utilization (MPCU)	(Thompson, Higgins, & Howell, 1991)
The motivational model (MM)	(Davis, Bagozzi, & Warshaw, 1992)
A model combining TAM and TPB (C-TAM-TPB)	(Taylor & Todd, 1995a) and (Taylor & Todd, 1995b)

Source: Imtiaz (2018)

Venkatesh et al. (2003) reported that these models and theories have been applied to the adoption and dissemination of technologies within the ICT field as well as other fields such as management, marketing, and social psychology. A significant motivation behind the UTAUT is the fact that many of the constructs underpinning existing theories are comparative in nature. As a result, it was reasonable to coordinate them to make a consolidated theoretical basis. (Venkatesh et al., 2003).

There are four main concepts in UTAUT, as shown in **Figure 2.3** above: Effort Expectancy (EE), Facilitating Conditions (FC), Performance Expectancy (PE), and Social Influence (SI). These main concepts are independent variables that influence the dependent variables of usage behaviour and behavioural intentions. Experience, gender and voluntary use facilitate the effects of the four key factors related to user intention to use technology based on the user experience. According to the UTAUT theory, three key factors (performance expectation, effort expectation, and social effect) influence behavioural intentions to use technology, while facilitating conditions influence user behaviour. The descriptions of these concepts are given in Table 2.

C2 General

Table 2: Descriptions of concepts in UTAUT

Constructs	Definitions
Performance Expectancy	"The degree to which an individual believes that using the system will help him/her to attain gains in job performance" (Venkatesh et al., 2003).
Effort Expectancy	"The degree of ease associated with the use of system" (Venkatesh et al., 2003).
Social Influence	"The degree to which an individual perceives that important others believe they should use the new system" (Venkatesh et al., 2003).
Facilitating Conditions	"The degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system" (Venkatesh et al., 2003).

Venkatesh et al. (2012) later proposed the UTAUT2 model, which describes technology adoption from a consumer perspective. There are some limitations in the UTAUT model, so the UTAUT2 model was developed to address them. UTAUT2 incorporates Consumer habit (CH), Hedonic motivation (HM) and Price value (PV) as supplementary factors of technology acceptance. HM was added because it was regarded as being one of the key indicators in substantial prior research (Venkatesh et al., 2003). PV was included because it is an important factor in the customer context and the use of the service. Previous studies have shown that CH plays a significant role in technology use (Imtiaz, 2018). As shown in Table 3, the UTAUT2 model defines new constructs.

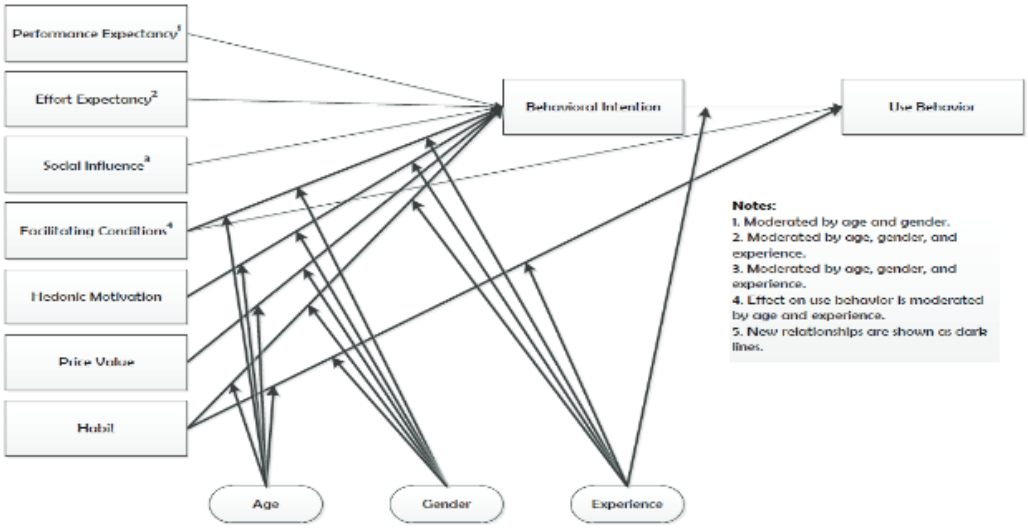

Figure 2.4: Unified Theory of Acceptance and Use of Technology (UTAUT2)

Table 3: Descriptions of new constructs UTAUT2

Constructs	Definitions
Hedonic Motivation	"The pleasure or enjoyment derived from using a technology" (Dodds, Monroe, and Grewal, 1991)
Price Value	"Consumers cognitive tradeoff between perceived benefits of the applications and the monetary cost of using them" (Dodds, Monroe, and Grewal, 1991).
Habit	"The extent to which people tend to perform behaviors automatically because of learning" (Limayem, Hirt, & Cheung, 2007).

Source: Imtiaz (2018)

The unified theories 1 and 2 (UTAUT) provide a detailed explanation for adopting, accepting, and utilising a new technology within an organization and in the context of a consumer market, but the multitude of constructs make these models very complex (StuttgartUniversity, n.d.). According to a study conducted by Stuttgart University (n.d.), UTAUT was originally developed to assess the use of new technologies within organisations, not for consumers. Additionally, the model aims to provide an overview of all factors influencing behavioural intentions toward the utilisation of new technologies within an organisation. This study focuses on the influence of perceived risk, trust, and security on consumers' online shopping behaviour, thus UTAUT is not appropriate.

According to the original author of UTAUT2, Model 2 is superior to Model 1 since both use and intention are explained (Imtiaz, 2018). Several studies have been conducted on UTAUT compared to UTAUT2. This is because UTAUT has been used numerous times in literature for the adoption of technology (Imtiaz, 2018). As a result, Venkatesh et al. (2012) suggested that future research should apply UTAUT2 to different countries, age groups, and technology platforms. The UTAUT2 has been used by several researchers to evaluate the adoption and diffusion issues of Information Technology. It should be noted, however, that many studies have utilised both models (UTAUT and UTAUT2) when evaluating m-commerce adoption and applications, which is not the case with e-commerce. Imtiaz (2018) indicates that UTAUT and UTAUT2 have been tested in different technology contexts, which provide a strong platform for further predicting and investigating the intention to adopt m-commerce. The UTAUT2 theory has the

C2 General

potential to be used in conjunction with other external theories to study behavioural intentions to adopt m-commerce (Imtiaz, 2018). E-commerce is the focus of this study, which examines consumers' perceptions of risk, trust, and security as they shop online. As far as this study is concerned, UTAUT2 will not be applicable.

2.3.2 Technology Acceptance Model (TAM)

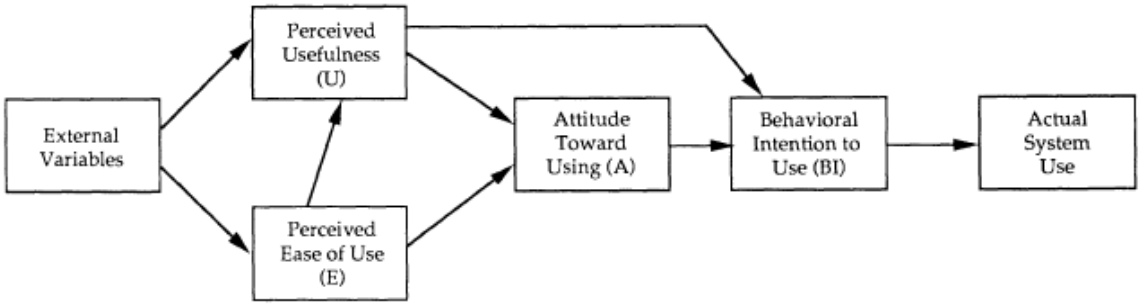

Figure 2.5: Technology Acceptance Model

In 1986, Davis proposed the TAM to explain the factors that influence the acceptance of computers. TAM provides a comprehensive understanding of consumer behaviour that is both parsimonious and theoretically justified, across a broad range of end-user computing technologies and consumer populations (Rigopoulos & Askounis, 2008). The primary purpose of TAM is to identify how external factors influence internal beliefs, attitudes, and intentions (Davis, 1989). The TAM approach is appropriate for this study since the main objective is to examine the influence of external factors on consumers' internal beliefs, attitudes, and intentions about shopping online. Users' attitudes towards technology adoption have been extensively measured using TAM in multiple domains, including the financial domain (Rigopoulos & Askounis, 2008). Two core concepts underlie TAM:

- Perceived usefulness, has been defined as a consumer's belief that online shopping will improve their shopping effectiveness (Shih, 2004).
- Perceived ease-of-use, has been defined as a degree to which an individual consumer expects e-commerce in its present form to be as easy and convenient as possible (Davis, 1989).

C2 General

Furthermore, variations of TAM have also been proposed to measure consumers' attitudes toward adopting a range of IT-based services (Rigopoulos & Askounis, 2008). TAM has been validated as a useful tool for examining and predicting the adoption of information technology by users by several follow-up studies (Taylor & Todd, 1995); Geffen & Straub, 2000; Doll et al., 1998).

TAM is derived from the Theory of Reasoned Action (TRA) model, developed by Fishbein and Ajzen to explain a broader range of behaviours based on a combination of personal beliefs and attitudes, as well as the influences of others' beliefs (Szajna, 1996). Based on the TRA concept, Comeau & Higgins (1995) argue that individuals will adopt specific behaviour if they perceive it will lead to positive results. A consumer's attitude is determined by whether they make a positive or a negative commitment based on TRA. In this study, consumer attitude is defined as a consumer's positive or negative perception of online purchasing (Andrews et al., 2007).

Researchers have used TAM to determine consumer attitudes towards online shopping and e-commerce adoption. This research was deemed to be the most appropriate theoretical framework. The hypotheses were developed based on the original TAM framework: Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Attitude towards Using (A), Behavioural Intention to Use (BI), and Actual System Use (AU). In addition to the four main concepts of the model, three others were considered relevant to the current study. These are Perceived Risk (Risk), Consumer Trust (Trust), and Cybersecurity risk.

C2 General

2.3.3 Theory of Planned Behaviour (TPB)

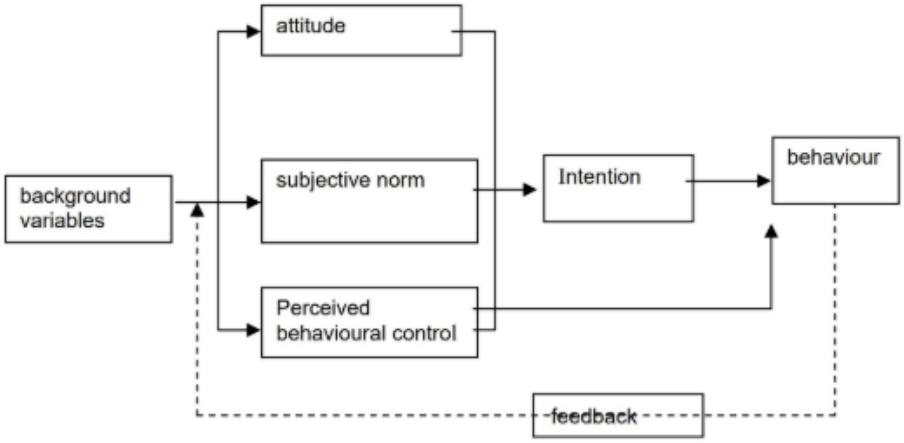

Figure 2.6: Theory of Planned Behaviour

Fishbein and Ajzen (1991) developed the Theory of Planned Behaviour (TPB) as an extension of the Theory of Reasoned Action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). As a result of the TPB, behavioural intention and perceived behavioural control are useful for predicting behaviour. Multiple studies have used TPB as a practical tool for health education campaigns, but not to measure online shopping or the adoption of e-commerce. This theory suggests that individuals' intentions can influence their decisions to engage in certain behaviours, such as smoking or quitting (Brookes, 2021). Three variables determine TPB intentions: a) **personal attitude** - a person's attitude towards a particular behaviour determines how they feel about it; b) **Subjective norms** - People's opinions about specific behaviours have an impact on us as consumers. The effects of smoking are perceived differently by smokers, for example; and c) **perceived behavioural control** - the degree to which we believe our behaviour is under our control. It depends on how we perceive our abilities and determination, as well as external factors such as the support and resources at our disposal (Brooks, 2021). According to this theory, we perceive behavioural control in two ways: It influences our intentions to behave in a certain way, i.e. when we perceive greater control over our behaviour, we are more motivated to follow through (Brooks, 2021). In the field of health psychology, the TPB model is one of the most frequently used models. According to Hagger et al. (2011), this type of model can be used to predict smoking and drinking intentions. In his research, he has found that alcohol addicts'

C2 General

attitudes, subjective norms, and perceptions of behavioural control influence their intentions to limit or stop drinking. This study deems TPB inappropriate for this study.

2.4 Conceptual framework:

The conceptual framework considers dependent variables and independent variables. The dependent variables are online shopping attitude and online shopping continuance. The independent variables are Customer Perceived Ease of Use (PEOU), Customer Perceived Usefulness (PU); Trust in online shopping (T), Perceived Risk (PR) and Cybersecurity Risk (CR). These main concepts are independent variables that influence the dependent variable of adoption of e-commerce and the mediation variable of intention to use e-commerce or to shop online.

The Technology Acceptance Model (TAM) proposed below serves as the foundation for this research. It also includes three additional constructs, namely: trust in online shopping, perceived risk, and cybersecurity risk. These constructs are potential moderators of a person's online shopping persistence. The proposed new model is depicted in Figure 2.7 below:

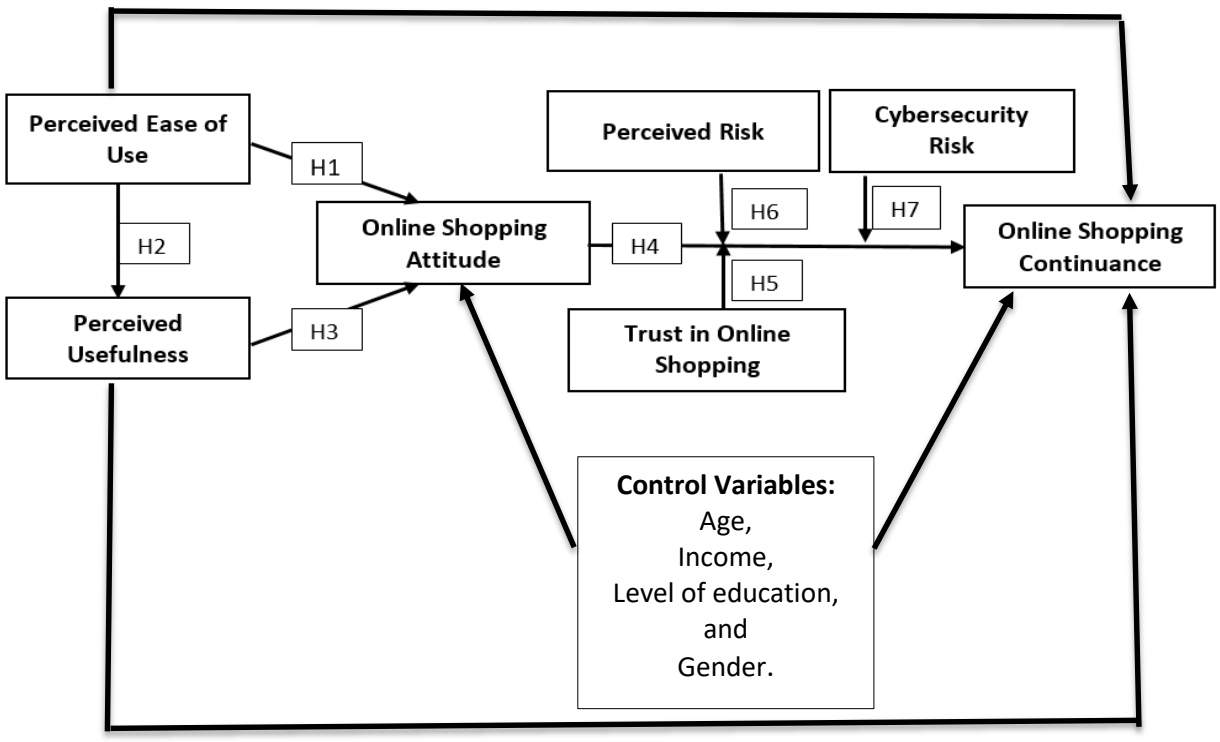

Figure 2.7: Proposed Research Model for this Study

Table 4: Explanation of Each Construct

Construct	Description
Perceived Ease of Use (PEOU)	PEOU is a user's perception of how easy a particular technology or system is to use. In the context of online shopping, it refers to how users perceive the ease with which they can navigate an e-commerce website, find products, make purchases, and perform other tasks related to online shopping (Davis, 1989).
Perceived Usefulness (PU)	It represents the user's belief that using a particular technology or system will enhance their job performance or make a specific task easier to accomplish. In the context of online shopping, it signifies the belief that shopping online provides advantages and benefits compared to traditional in-store shopping (Shih, 2004).
Online Shopping Attitude (SA)	Lin (2007) defines the online shopping attitude as overall customer perceptions of favourable or unfavourable attitudes towards purchasing items from retail websites using the internet.
Perceived Risk (PR)	The susceptibility that arises among consumers due to the rise of e-commerce.
Trust in Online Shopping (T)	Consumer perception of e-commerce platforms' trustworthiness, influences their purchases.
Cybersecurity Risk (CR)	In the context of e-commerce, cybersecurity risk refers to the probability of being exposed or losing information as a result of a cyber-attack or data breach (Tunggal, 2022).

2.5 Hypothesis Development

In current examinations, frameworks such as the Theory of Reasons Action (TRA) by Fishbein and Ajzen (1975), the Theory of Planned Behaviour (TPB) by Ajzen (1991), and the Technology Acceptance Model (TAM) by Davis (1986) is widely used. In various nations, these Frameworks' have been applied as attitude theories

C2 General

of consumer behaviour (Bianchi & Andrews, 2012). As a result of the previous inferences, the study fits within the Technology Acceptance Model (TAM). A model like this has been used to determine consumer attitudes towards e-commerce and online shopping and was considered the most appropriate framework for this study. TAM's original framework was used for developing hypotheses: Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Behavioural Intention to Use (BI), and Actual System Use (AU). In addition to the four main concepts of the model, three others were considered relevant to the current study. These are Perceived Risk (PR), Trust in Online Shopping (Trust), and Cybersecurity Risk (CR).

According to the original TAM framework, PEOUs play an important role in the adoption of information technologies, such as e-commerce (Vasileiadis, 2015). Research done in the fields of user experience and e-commerce has consistently shown that there is a positive correlation between PEOU and Online Shopping Attitude among users. What this means is that when users perceive an online shopping platform as easy to use, they will have a more positive view of it, and they will be more likely to shop on it. Online Shopping Attitude refers to a user's overall feelings, beliefs, and opinions about online shopping. It encompasses both positive and negative emotions, trust, satisfaction, and the intention to use online shopping platforms. Several factors influence the relationship between PEOU and Online Shopping Attitude such as: **1**. Trust: Users are more likely to trust and have a positive attitude towards an online shopping platform that they find easy to use. They believe that a platform that is easy to use is less likely to cause errors or problems during the shopping process. **2**. Satisfaction: When users find online shopping easy and convenient, they are more likely to be satisfied with their shopping experience. High satisfaction is closely related to a positive attitude. **3**. Intention to Use: Users who perceive ease of use are more likely to have the intention to continue using the platform for future shopping. This intention is a strong indicator of a positive attitude. **4**. Word of Mouth: Users who have a positive attitude towards an online shopping platform that is easy to use are more likely to recommend it to others, contributing to its reputation and growth. E-commerce businesses often strive to improve the perceived ease of use of their websites and apps because it not only enhances the overall user experience but also positively impacts users' attitudes, which can lead to increased sales, customer loyalty, and

C2 General

positive reviews. Designing an intuitive, user-friendly interface and providing clear navigation and functionality are essential to improving PEOU. Businesses invest in User Interface (UI) and User Experience (UX) design to make their online shopping platforms easy and enjoyable to use. E-commerce platforms frequently collect user feedback to identify areas where ease of use can be enhanced. Continuous improvement and iteration are key strategies for maintaining and increasing PEOU and, consequently, Online Shopping Attitude. According to Davis et al., 1989, the level of PU indicates one's trust in the ability to improve performance through the use of technology systems. According to the definition of PU in this situation, an individual's level of trust in the effectiveness of using a technological system or cell phone device to obtain information about business strategies is determined by the degree to which they trust their ability to do so (Vasileiadis, 2015). Taylor and Todd (1995) found that PU shapes positive attitudes toward information systems. Several factors are likely to contribute to the perception of the usefulness of online shopping, including the convenience that it offers. Shoppers can browse and purchase products from the comfort of their homes, saving time and effort. The vast assortment of products available online, often beyond what is available in physical stores, contributes to their perceived usefulness. Online shoppers can easily compare prices, read reviews, and seek discounts or deals, enhancing the perceived value of online shopping. Perceived usefulness is also closely related to trust and security. If consumers believe that online shopping platforms are secure and trustworthy, they are more likely to perceive online shopping as useful. Perceived Usefulness is a crucial determinant of Online Shopping Attitude. When consumers perceive online shopping as beneficial and valuable, they are more likely to have a positive attitude toward it, leading to increased adoption and satisfaction with online shopping services. Businesses that understand and cater to the factors influencing perceived usefulness can gain a competitive advantage in the online retail space. Furthermore, in an original TAM, a consumer's desire to adopt e-commerce is seen as a forerunner to genuine use (Davis et al., 1989). As a result, it was reasonable to hypothesize an important connection between PEOU, PU, BI, and e-commerce adoption.

H1: Perceived Ease of Use has a positive influence on Online Shopping Attitude.

C2 General

H2: Perceived Ease of Use has a positive influence on Perceived Usefulness.

H3: Perceived Usefulness has a positive influence on Online Shopping Attitude.

Blackwell et al. (2001), shopping intention influences the shopping behaviour of buyers. It was an aspect that could be used to predict future actions (Blackwell et al., 2001). Ajzen (1991) defines intention as "a strong motivation that inspires consumers to complete a task". Akbar et al. (2014), however, argue that buyers' intentions are important when handling multiple activities. There may be a wide range of expectations among purchasers, including their intention to buy. A buyer's shopping intention is a plan to pick where he or she wants to purchase products, according to Blackwell et al. (2001). Thus, Delafrooz et al. (2011) define online shopping intention as the strength of a customer's desire to make a particular purchase through the Internet. The attitude of the consumer influences their intention (Fishbein & Ajzen, 1975). A person's online shopping attitude refers to how they evaluate and perceive the overall experience of online shopping, which can be influenced by several factors like their satisfaction, what they perceive to be ease of use, what they perceive as trust, what they perceive as a useful service, and what they want. On the other hand, online shopping continuance refers to the decision of consumers to continue using online shopping platforms after they have made their initial purchase or interaction with the platform. The Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB) suggest that a person's intention to continue online shopping is influenced by their attitude toward online shopping, subjective norms, and perceived behavioural control. If a consumer has a positive attitude toward online shopping, it is more likely that they will continue using it. TAM posits that perceived ease of use and perceived usefulness of technology influence an individual's intention to use it. If consumers find online shopping easy to use and useful, they are more likely to continue using it. Attitude plays a significant role in shaping perceptions of usefulness and ease of use. There are several factors that play a role in predicting the continuity of online shopping, including trust and satisfaction with the experience. As long as consumers are satisfied with their previous online shopping experiences and feel secure about the process of making payments online, they are more likely to continue using online shopping platforms in the future. Even though perceived risks related to privacy, security, or product quality may negatively impact online

C2 General

shopping attitudes and continuation, reducing perceived risks can help improve the linkage between online shopping attitudes and continuation. Studies suggest that once consumers become habituated to online shopping, they may continue due to the convenience and low switching costs associated with changing platforms. Habitual behaviour can override attitudes in some cases. Online retailers often use personalization and recommendations based on past behaviour to enhance the shopping experience. If consumers receive relevant recommendations and personalized content, it can positively impact their attitudes and encourage them to continue shopping online. The influence of friends, family, and online reviews can impact a person's attitude and, consequently, their decision to continue shopping online. Positive reviews and recommendations can enhance online shopping attitudes. A positive relationship has been shown between consumers' shopping attitudes and their buying intentions concerning online shopping (Ha et al., 2019). Several empirical studies have also demonstrated this relationship (Lin, 2007; Pavlou & Fygenson, 2006; Yoh et al., 2003). As a result, the following hypothesis was proposed:

H4: Online shopping attitude has a positive influence on Online Shopping Continuance.

There is evidence that trust is an antecedent of perceived risk (Rachbini, 2018). Pavlou (2003) discovered that when there is trust in e-commerce, a buyer's perception of risk in online transactions with a seller decreases. Luhmann (1988) further explains that trust is a critical component of activity when there is a perceived risk of an adverse outcome. In addition, Vasileiadis (2015) believes that trust is more important when consumers enter into risks where the outcome is beyond their control. Because of the inherent idea of online shopping, consumers will always face some level of risk (Vasileiadis, 2015). According to Rachbini (2018), consumers are more concerned about their privacy, security, and online transactions. Trust can play a crucial role in resolving these consumers' risks, as a result of their uncertain circumstances (Luhmann, 1988). In this way, as trust builds, purchasers will experience less risk, customers will experience less risk than if the trust had not been built, and the impact of trust is interceded by perceived risk (Rachbini, 2018).

C2 General

Bahl and Kesharwani (2000) report that trust has a significant impact and influence on online buying behaviour. According to Holsapple and Sasidharan (2005), trust plays a significant role in determining customer behaviour and the adoption of e-commerce technology. A study by Koufaris and Hampton-Sosa (2002) reveals that trust influences online purchase decisions significantly. Trust and online buying goals are positively correlated (Eastlick et al., 2006). In addition, when trust in online shopping is high, the relationship between online shopping attitude and online shopping continuance will be stronger. Thus, the following hypothesis was proposed:

H5: Trust in Online Shopping will moderate the relationship between Online shopping attitude and Online Shopping Continuance.

Various studies suggest that perceived risk should be incorporated into TAM models (Vasileiadis, 2015). Furthermore, he stated that perceived risk in traditional commerce was associated with fraud and low-quality products. In today's world, perceived risk encompasses seven types of risks that Jacoby and Kaplan (1972) identified: financial, product performance, physical, psychological, social, time, and opportunity cost risk. It is in fact a complex and multifaceted construct, as it encompasses a wide range of underlying dimensions, including delivery, financial, social, performance, and many others. The dimensions of perceived risk are often interconnected with each other. For example, financial risk may also impact performance and social aspects. A product or service with financial instability may lead to concerns about its overall performance and how others perceive its quality. These interconnections make it challenging to isolate and study individual risk dimensions in isolation. It is important to understand that people do not make decisions solely based on one dimension of perceived risk. Instead, they consider all possible risks and factors when making decisions about their future. For instance, when deciding whether to purchase a new electronic device, consumers may weigh the potential for it to break down (performance risk), the cost of repairs or replacements (financial risk), the perceived social status associated with owning the product (social risk), and the likelihood of timely delivery (delivery risk). These dimensions collectively shape their decision-making process. In practical scenarios, people do not assess and manage each risk dimension separately. Instead, they evaluate the overall risk associated with a decision. For instance,

C2 General

when investing in the stock market, individuals consider the combined financial, performance, and social risks rather than treating them as distinct components. Thus, the concept of perceived risk as a whole reflects real-world decision-making more accurately. Perceived risk has a significant psychological and emotional impact on individuals. The stress and anxiety associated with risk perception often result from the cumulative effect of multiple risk dimensions. Understanding the holistic nature of perceived risk is crucial for comprehending the emotional responses and coping strategies that individuals employ in response to risk. Empirical research in fields such as consumer behaviour, marketing, and psychology often treats perceived risk as a unified construct. This approach has yielded valuable insights into how consumers make decisions, manage risk, and respond to various risk factors. Researchers have shown that considering perceived risk as a whole construct better predicts actual consumer behaviour and intentions. Study results revealed that monetary risk, product risk, and security and privacy risk are the most prevalent in the online shopping environment. As stated by Kim et al. (2008), consumers' perception of risk poses a significant obstacle when deciding whether to do online shopping. Further, the authors defined perceived risk as a customer's belief that online shopping will result in questionable adverse outcomes. In various studies, perceived risk has been found to influence consumers' online shopping decisions (Kim et al., 2008). In contrast to traditional commerce shopping, consumers who make an online purchase are likely to feel hesitant to purchase from an online store due to the sense of risk involved (Rachbini, 2018). This is because consumers should provide personal information to vendors and hope that their information will be safely stored and not shared with unauthorised users. Thus, customers will consider risk more when making purchases online and decide whether to buy or not. In addition, when shoppers perceive high risk in e-commerce, the relationship between online shopping attitude and online shopping continuance will be weaker such that they may discontinue shopping online. Therefore, the following hypothesis was proposed:

H6: Perceived Risk will moderate the relationship between Online shopping attitude and Online Shopping Continuance.

Few studies examine how cybersecurity impacts online shopping from the perspective of consumers. Pookulangara et al. (2013) argue that consumers'

C2 General

perspectives have not been adequately explored. There have been several studies examining privacy online based on value, perceived risks, trust, service quality, and cross-cultural comparisons (Zeithaml, Parasuraman, Malhotra, 2002; Wolfinbarger & Gilly, 2003); however, none of these studies have examined the impact of cybersecurity on online shopping. Privacy and security concerns are treated in most studies as a single construct with security as one of the components (Liu, Marchewka, Lu, & Yu, 2004; Xu & Teo, 2004). In the next step, this study aims to fill the cybersecurity gap in the literature by analyzing consumers' perceptions of cybersecurity through online survey questionnaires. In addition, when shoppers sense high cybersecurity risk in e-commerce, the relationship between online shopping attitude and online shopping continuance will be weaker such that they may discontinue shopping online. Therefore, the following hypothesis was proposed:

H7: Cybersecurity Risk will moderate the relationship between Online shopping attitude and Online Shopping Continuance.

Table 5: Summary of the Hypotheses for this Study

Hypotheses	Description
H1	Perceived Ease of Use has a positive influence on Online Shopping Attitudes.
H2	Perceived Ease of Use has a positive influence on Perceived Usefulness.
H3	Perceived Usefulness has a positive influence on Online Shopping Attitudes.
H4	Online shopping attitude has a positive influence on Online Shopping Continuance.
H5	Trust in Online Shopping will moderate the relationship between Online shopping attitude and Online Shopping Continuance
H6	Perceived Risk will moderate the relationship between Online shopping attitude and Online Shopping Continuance.
H7	Cybersecurity Risk will moderate the relationship between Online shopping attitude and Online Shopping Continuance.

C2 General

2.7 Chapter Conclusion

This chapter provides the details of the literature reviewed, to adequately address the research objectives for this study.

Online shopping, according to Aseri (2021), allows you to buy products whenever and wherever you want, with the payment method of your choice, while receiving them in the manner of your choice. Despite the convenience and less upsetting aspects of online shopping, it is vulnerable to malware attacks and other threats that compromise privacy, security, and trustworthiness (Aseri, 2021). Phishing and adware are some of the methods used in these attacks, but these are not limited to them. Due to this, respectable firms like Amazon and Google have also suffered information breaks (Aseri, 2021). Due to widespread cases of extortion, people remain hesitant about adopting online shopping. The lack of awareness by retail stores leads to several consumer fears, and lastly, online payments are also viewed as high risks. It is important to provide sufficient information on cybersecurity threats to consumers so that the security of internet shopping on e-commerce websites can be enhanced and negative perceptions about internet shopping can be removed (Aseri, 2021).

The first research objective was to determine the perceived benefits and barriers associated with online shopping in South Africa. Various studies related to online shopping in South Africa will be explored to achieve this goal. Furthermore, to determine the perceived benefits and barriers associated with online shopping, a quantitative approach will be applied. Various benefits can be gained by online shopping that cannot be provided by traditional businesses, according to Usman and Kumar (2020), such as ease of use, reduced time, the ability to shop from anywhere in the world, a wide variety of products, and others. It will be interesting to discuss how and to what extent perceptions of online shopping play a role in consumer purchase behaviour in light of the online shopping concept.

A second research objective was to examine the factors that influence consumer shopping attitudes within South Africa. As part of this study, the TAM framework will be used to explore the relationship between a consumer's behavioural intentions and related factors such as perceived ease of use, perceived

C2 General

usefulness, trust in e-commerce, and perceived risk in e-commerce in the context of consumer behaviour.

A third research objective was to determine whether online shopping attitudes influence shoppers' intentions to continue shopping online. A consumer's response to the questionnaire will be used to determine the online shopping attitude which is affecting the consumer's purchasing behaviour through responses to the survey's questionnaire.

A fourth research objective examines how cybersecurity risks, perceived risks, and trust influence online shoppers' intentions to continue shopping. The analysis of consumers' perceptions of cybersecurity will be conducted through the use of online survey questionnaires to determine their perceptions. Additionally, the impact of cyber-attacks and cybersecurity risks on consumer spending habits in South Africa will be explored in various studies related to the impact of cyber-attacks and cybersecurity risks

This literature review aimed at gaining a better understanding of how e-commerce has dominated the world and what the impact on South African consumers would be if e-commerce or online shopping were to become mainstream in South Africa versus how it is currently done in other countries.

C2 General

CHAPTER 3. RESEARCH METHODOLOGY

This chapter discusses in detail the research design and methodology used for this study. The logical stance of existing literature and the research problem were used to identify the most relevant options in selecting the methodology. More precisely, the chapter provides a clear guideline about why a quantitative approach was chosen as the most appropriate for this research.

3.1 Research approach

In the research approach, information gathering, assessment, and interpretation of data about a research problem are discussed using examination techniques to identify potential responses to questions. To ensure that the data collection process is valid and verifiable, the process should be controlled and overseen precisely. In research, there are three types of methodologies: qualitative, quantitative, and mixed-methods, in which qualitative and quantitative methodologies are combined (Apuke, 2017).

The most applicable research methodology for the study was considered to be the quantitative approach. This method focuses on quantifying the data collection and analysis of the information. It is a process that uses a logical approach to testing theories that are formed by the researcher with positivist viewpoints. Through this process, measurable information is collected that can be transformed into statistical information that provides patterns and that ensures the legitimacy and consistency of the study. Quantitative study methods have been extensively used in previous research studies for the acceptance of technologies (Leedy, Paul D.(date?); Ormrod, 2010). The constructs that were used for the research were PEOU, PU, SA, PR, TE, CR and online shopping continuance.

Literature primarily uses two types of research methods: deductive and inductive. As part of the deductive approach, past literature is scanned and analysed, and hypotheses and prepositions are used to draw logical conclusions from the theory. Hypotheses and prepositions are empirically tested later on, and conclusions are presented to confirm or refute the claims (Ivanov, 2012). The inductive approach

C2 General

is based on the opposite methodology. Observations lead to theoretical foundations or follow patterns to results/cases/rules (Ivanov, 2012).

The deductive approach was considered to be most appropriate for this study since e-commerce has been the subject of several studies and certain theoretical have been developed. As a result of this approach, the following steps were identified:

1. Literature reviews were used to formulate hypotheses.
2. Hypotheses were formulated to determine whether there is a correlation between variables.
3. The data was collected, compiled, and scrutinized.
4. Analyses were performed on the hypotheses.
5. Statistical techniques were used to analyse the findings of the inquiry.
6. A theory was verified or modified (Saunders, Lewis, & Thornhill, 2007).

3.2 Research design

The research design of a study can be defined as the technical plan that is designed by the researcher. The technical plan is structured and formulated according to the overall goals and aims of this study to ensure that all data collected adds to the accuracy, reliability and validity of the study. The research design further elaborates on how the research is to be performed and identifies key factors that need to be managed to ensure that the results are achieved systematically. There are various types of research designs: comparative designs, case studies, cross-sectional designs, experimental designs and longitudinal designs (Van Wyk, 2015).

A cross-sectional design was chosen for this study. Deductive approaches are usually associated with this type of design, which this study applied (Gustavsson & Johansson, 2006). Makhitha and Ngobeni (2021) found that previous online shopping studies used a cross-sectional design to determine factors that influenced online shopping. Scholars can gather enormous amounts of data from a large population using the cross-sectional design. Data is usually collected using a questionnaire, which allows for easy comparison by allowing for uniform data collection. The said data can then be numerically expressed and quantitatively

C2 General

analysed (Gustavsson & Johansson, 2006). As a result, a cross-sectional design method was selected for this research study to investigate the influence of perceived risk, trust, and security on online shopping.

This research aims to contribute to the discussion about the influence of perceived risk, trust, and security issues on online shopping behaviour. A quantitative methods framework was used for objectively reviewing and further validating the information derived from existing literature about the perceived risk, trust, and security of online shopping behaviour. The quantitative study was used to test the accuracy of the views of participants regarding this information.

A consistency matrix (Appendix A) provides an overview of how the research questions were designed to support the study**.**

3.3 Data-collection methods

Data-collection methods are the methods used to enable the data-collection process within the research study. These methods are chosen to aid the process of collecting information from suitable sources that apply to the research problem. The data-collection process enables the researcher to assess their hypotheses against the collected data. Primary source data can be collected via interviews, observations and questionnaires, with the questionnaire and structured interview schedule being quantitative data-collection methods.

An online survey assessment provided the opportunity to assess and analyse consumers' perceived views about the risk, trust and security of the online shopping process. Automated tools were used to assist with data collection and the development of a clear process and procedures.

To achieve the aims of this study, a questionnaire instrument was designed based on previous research studies (Makhitha & Ngobeni, 2021). A quantitative questionnaire was developed using the Qualtrics software application. The proposed research model and cause-effect variables were tested using a questionnaire survey with 31 questions (Vasileiadis, 2015). A (URL) link was issued to the participants through a cluster of mail addresses, LinkedIn, Facebook

C2 General

and WhatsApp applications. Participants were informed of the objectives of the survey.

3.3.1 Scale and Data Collection Items

In this study, a Likert-type scale was used to make the statistical analysis of the results easier. Researchers can calculate means and standard deviations and perform various tests to identify trends and relationships in the data. All participants were offered the same set of questions once in the online survey created through Wits Qualtrics. The Likert-scale model was applied to structure the respondent's answers to the options. Participants responded to each declaration using a seven-point Likert-type rule, where 1 = "strongly disagree" and 7 = "strongly agree". The responses were summed up to produce a score for the measures.

A structured data-collection instrument was used for the collection of information. The online questionnaire is an effective research instrument for collecting and standardising data for further analysis.

3.4 Population and sample

The study was open to all eligible South Africans over the age of 18. The quantitative online questionnaire was shared with participants who have access to the Internet via computer or mobile applications. The majority of the participants were from Wits University cohorts and consumers in South Africa who have shopped and currently shopping online. The university students' sample group was considered because these are future consumers who are likely to shop online and adopt the e-commerce system successfully.

3.4.1 Sample and sampling method

The sample selected for this study is composed of Wits University students between the ages of 18 and over 40, as well as consumers in South Africa who can access the Internet and conduct online shopping. Emails were sent to the participants explaining the research and objective of the study. The email included

C2 General

a link to the Wits Qualtrics server, which directed the participant directly to the survey.

The study aimed to reach a minimum of 500 participants, which will help ascertain consumers' readiness for e-commerce adoption and shopping continuance. There were 262 responses received, 20 of which were incomplete, with missing information or partially completed questionnaires, and were thus excluded from the data collected. 242 responses were taken into consideration for the analysis.

The sample size was calculated using the Tinsley and Kass (1979) calculation, which states that a minimum of 5 and a maximum of 10 participants per variable will provide a reliable dataset. The study questionnaire instrument had a total of 31 questions as shown in Appendix B.

The snowballing sampling method was used to improve the participation rate. This method entailed the nomination of a key group, referred to as the "primary group", which nominated secondary sources to participate in the study (Terrell, 2015).

3.4.2 Demographics of participants

The demographic profile of the participants selected to respond to the questionnaire was eligible South Africans who had access to the Internet. Emails were sent to respondents for the research with an expectancy of at least 500 responses. The results were less than the expected number of 500 responses. In total, 262 responses were received, of which 20 respondents had not fully completed the questionnaire, with missing information and partially completed questionnaires.

The results, including the demographics, are presented in Chapter 4 of this research.

3.5 Data analysis and interpretation

Data analysis and interpretation of the collected information is a crucial part of the research study. Data analysis enables the researcher to assess the collected data. It further requires the understanding of data collected with the use of exploratory

C2 General

techniques and consistent assessment to determine trends and relationships between the factors or patterns.

3.5.1 Data and information processing

The data analysis can be described as the process of data classification, investigation and validation of the raw data that was collected for the study.

Data is transformed into meaningful information through three processes: the entry process, the data coding process; and the data cleaning process.

Phase 1. Information Entry Process: The Qualtrics application enabled the research participants to provide the required inputs seamlessly. These were then automatically recorded and stored. The information was automatically uploaded onto the application for formatting and information data manipulation purposes.

Phase 2. Information Coding Process: Following this process involved transforming the collected information into a meaningful dataset by coding the collected information. Coding enabled the researcher to develop a method to ensure that the information was reliably and systematically obtained from the data source. The information was then verified and assigned a numerical value for further analysis. The Qualtrics application enabled the researcher to set pre-code information with the assistance of the Likert Scales (1 “strongly disagree” to 7 “strongly agree”).

Phase 3. This process involved inspecting the information for completeness, validating the information and ensuring that it was reliable. A total of 262 participants finished the online survey. During the validation process, it was discovered that a total of 20 participants had not fully completed the questionnaire, with missing information and partially completed questionnaires. After the information-cleaning process had been conducted, the final sample for this study was 242.

C2 General

3.5.2 Quantitative methods for data analysis

A separate Microsoft Excel spreadsheet was used to capture the data before it was imported into IBM SPSS27 software. The purpose of this was to ensure that the data had been thoroughly cleaned. A clear procedure for information coding was established to expedite the data analysis. The IBM SPSS27 software was used to extract data from the questionnaire responses. Character symbols and numeric data were assigned to pre-coded responses. Upon completion of the analysis, statistical analysis was used as the next step. Statistics and graphical analysis were used to investigate the data, explore the correlation between the variables and assess their overall impact on each factor.

The statistical analysis was performed using multiple phases:

Phase 1: This phase involved determining the data's validity and reliability. In this phase, a correlation analysis was performed to determine the significant correlations between the independent variables and the outcome (dependent) variables (Shopping Attitude and Shopping Continuance). The Technology Acceptance Model (TAM) consists of four main concepts as illustrated in Fig 2.7 above: Customer Perceived Ease of Use (PEOU), Customer Perceived Usefulness (PU); Trust in online shopping (T), Perceived Risk (PR) and Cybersecurity Risk (CR). These main concepts are independent variables that influence the dependent variable of adoption of e-commerce and the mediation variable of intention to use e-commerce or to shop online.

Phase 2: In this phase, factor investigation was performed to alter the large variables into a smaller number of factors. Cluster analysis was performed to group the participants according to their responses.

Phase 3: Here multivariate assessment was performed along with several linear regression valuations to validate the hypotheses of the study.

Phase 4: In the last phase, a multiple linear regression assessment was performed to determine the correlation between the dependent and independent variables and further validate the outcomes of the regression analysis.

C2 General

3.6 Validity and reliability

The objective of determining the validity and reliability of the study is fundamentally important to confirm that the data collected is reliable, replicable, and accurate. The confirmation of reliability and validity are preconditions to ensure the quality and integrity of a measurement instrument (Kimberlin &. Winterstein, 2008).

3.6.1 Validity of the study

The quantitative questionnaire used for the study was adopted from earlier studies and customised for this study. This was undertaken with the objective of ensuring the reliability and validity of the constructs. A pilot questionnaire was prepared for a small sample of 12 participants. The participants were offered the opportunity to ask clarification questions and for validation of their understanding. Certain words were modified in response to the comments made by the participants.

Literature related to the online shopping process and data collection assisted with the development of valid measuring instruments for the study.

Similar research projects that used the same assessment methods, such as regression analysis, reliability analysis and factor analysis, were consulted. The benefits of reviewing these methods were that it allowed the researcher to identify whether there were any errors in the analysis, any inconsistent information or any variables that would make the study invalid.

The implementation of a sample test before the release of the main study ensured that the data-collection methodology was consistent and complied with the prescribed guidelines. The key constructs identified were checked with the academic supervisor of the study to establish that all key constructs were included, and the measuring instruments were relevant and practical.

The Average Variance Extracted (AVE) and Composite Reliability (CR) were used for testing the internal consistency and validity of the information collected. The study revealed that Cronbach’s alpha (CA) and CR values were better than 0.7 while the AVE value was greater than 0.5, which is considered acceptable (Hair et al., 1988). Therefore, this study made use of the CR and AVE methods to define

C2 General

the internal validity of the information and warrant that the factors were measured consistently and free from random errors.

3.6.2 Reliability of the study

Reliability can be described as a key fundamental that ensures that the research instruments can deliver similar results if the study is repeated by other researchers. Ursachi et al. (2015) further describe reliability as a research instrument that brings consistency and stability to a study. According to Saunders et al. (2007), questionnaires distributed at various times of the week may produce varying results. A neutral time is therefore most appropriate, not at the start of the week or just before the weekend. In addition, participant bias was identified as a threat to reliability in other studies, which inquired into the truthfulness of responses provided by respondents. Therefore, the answers are more likely to be accurate if the respondent is guaranteed anonymity (Gustavsson & Johansson, 2006). As a result, all respondents to this study's questionnaire were kept anonymous to reduce the likelihood that their responses were false. This is to strengthen reliability.

Cronbach's alpha is an assessment method that is used to determine internal consistency and reliability, determining how interrelated a set of items is within a group. It assists in measuring the scales of reliability of a study. As the average of interrelated item correlation grows, Cronbach's alpha grows as well (holding the number of items constant). An acceptable rule of thumb is a score of 0.6-0.7, which shows a suitable degree of consistency, and 0.8 or better a very suitable level. A score higher than 0.95 may not be interpreted as significantly superior, however, as it may be a warning of redundancy within the study (Ursachi et al., 2015).

The Likert scale items were subjected to the internal reliability test, by the researcher computing the AVE of each construct.

To ascertain the reliability of the study, similar research projects that used the same assessment methods will be used to help identify any errors in the analysis, information inconsistency and variables that would make the study unreliable.

C2 General

3.7 Demographic profile of the participants

In terms of matching the national population with previous studies, the participants selected were students and the South African population at large. University students were selected as they were more likely to have admission to the Internet, a smartphone and/or a computer and were more likely to be computer literate.

The following criteria were considered important:

Age: Participants had to be adults (over 18 years old).

Gender: To establish the influence of gender on consumer behaviour and intention towards online shopping.

Education: To establish the influence of education on online shopping behaviour.

Income: To establish the influence of income on consumer behaviour towards online shopping.

3.8 Ethical considerations

The objective of this study was to investigate the impact of perceived risk, trust and security on online shopping behaviour. As such, all participants were duly advised that any information shared would remain confidential and the information they provided would not be disclosed to any unauthorised parties.

The method used to collect information from the respective participants was performed with the assistance of the Qualtrics application. The questionnaire was standardised and anonymous. Clear guidelines about the research were shared with all participants. It was explained that their participation in the study was voluntary and that they had the option of withdrawing from the process without any consequences. The participants were also informed that no personal information was required from them apart from specific demographic information regarding gender, age, education and income and that all the information that they provided would comply with the Wits University ethics statutory guidelines.

C2 General

The questionnaire began by soliciting informed consent from the participants, advising the participants that all information collected would be used for the primary objective of this research and that all information collected would be encrypted and stored according to regulations from the University. The participant consent form is attached as Appendix C and the ethics clearance certificate from the Wits Business School Ethics Committee is attached as Appendix D.

C2 General

CHAPTER 4. PRESENTATION OF RESULTS

This chapter presents the results of the research. As discussed in Chapter 3, the primary data collected was analysed. In particular, how the results were able to answer the hypotheses outlined in Chapter 2.

The reliability and validity assessment of the instruments was conducted as follows:

- Average Variance Extracted (AVE) and Composite Reliability (CR) were used for testing the internal consistency and validity of the study.
- Pearson Correlation was used for testing the constructs for the consistency validity of the study.
- Cronbach's alpha was used as an assessment for testing the internal consistency reliability of the study.

After it was established that each instrument of the constructed measure was valid and reliable, the researcher further investigated the impact of the path coefficients of each path for each construct.

4.1 Descriptive Statistics:

4.1.1 Demographic information

The survey was disseminated to the target sample of online shopping consumers. This section discusses the demographic information provided by the questionnaire respondents. The participants' demographic information is summarised in Table 6 below.

Table 6: Demographic Information

Measure	Item	Frequency =*f*	Per cent % =cf	Cumulative Per cent
Gender	*Male*	105	43.4	43.4
	Female	137	56.6	100.0
Total		**242**	**100.0**	

C2 General

Age	*18-29*	25	10.3	10.3
	30-40	111	45.9	56.2
	40 >	106	43.8	100.0
Total		**242**	**100.0**	
Qualifications	*High school or prior*	1	.4	.4
	Diploma	20	8.3	8.7
	Bachelor's degree	72	29.8	38.4
	Honours or Post-graduate	130	53.7	92.1
	Master's degree	17	7.0	99.2
	Doctoral degree	2	.8	100.0
Total		**242**	**100.0**	
Income	R0 - R4000	8	3.3	3.3
	R4000 - R6000	31	12.8	16.1
	R6000 >	203	83.9	100.0
Total		**242**	**100.0**	

4.1.1.1 Gender

The gender distribution in the final coded and cleaned sample of 242 participants indicated that 43.4% (f= 105) of the participants were males while 56.6% (f= 137) were females.

4.1.1.2 Age:

The sample characteristics for age illustrate that the age group 18-29 was at 10.3% (f = 25), while the highest number of participants were in the 30–40 age group at 45.9% (f = 111). The least represented age group was 40> at 43.8% (f = 106). According to the results, respondents aged 30 to 40> purchased more online products than those aged 18 to 29.

4.1.1.3 Qualification levels:

At 53.7% (f= 130), honours or post-graduates made up the most significant part of the sample group, followed by those who held bachelor's degree qualifications at 29.8% (f=72) of the sample. Diploma holders constituted 8.3% (f=20) of the

C2 General

sample, 7.0% (f=17) respondents have master's degrees and .8% (f=2) respondents have doctoral degrees. Only .4% (f=1) of the sample group had high school or a prior certificate as their highest qualification.

4.1.1.4 Income:

According to the above table, of the 242 respondents, 3.3% (f=8) respondents belong to an income level between R0 to R4000, 12.8% (f=31) respondents belong to an income level between R4000 to R6000, and 83.9% (f=203) respondents belong to an income level above R6000.

4.2 Determine the validity of the study

To calculate the CR and AVE values, IBM SPSS27 software and MS Excel were used. AVE = sum of squared loadings/sum of squared standardised loadings + sum of error variance and CR = squared sum of standardised loadings/squared sum of standardised loadings + sum of error variance were the formulas used to load factor loading results extracted from IBM SPSS27 software into MS Excel. The AVE compares the amount of variation captured by a construct to the amount of variation caused by measurement errors. The study found that the CR values exceeded 0.7 and the AVE values surpassed 0.5 (cf. Hair et al., 1988). Although Hair et al. (1988) suggest not accepting an average variance extracted (AVE) value below 0.5, we may still validate a construct with an AVE of 0.4, as indicated by Fornell and Larcker (1981) when the composite reliability surpasses 0.70, justifying sufficient convergent validity. According to Fornell and Larcker (1981), when AVE is significantly lower than the conventional 0.5 thresholds, calculate the mean (a simple average of the numbers), then subtract and square the result for each number (the squared difference). The average of the squared differences is then calculated (Bhatt & Nagvadia, 2021).

The reliability of the scores from the Likert scales obtained from the TAM questionnaire items was measured using the CR and AVE measures for each construct. CR and AVE scores of above 0.7 show satisfactory internal consistency and acceptable reliability of a model's measurement model.

C2 General

Table 7: Average Variance Extracted and Composite Reliability

Construct	Composite Reliability (CR)	AVE
Perceived Usefulness (PU)	0.819	0.764
Perceived Ease of Use (PEOU)	0.865	0.823
Perceived risk (PR)	0.832	0.746
Trust in E-commerce (TE)	0.798	0.747
Perceived Security protection (PSP)	0.787	0.778
Shopping attitude (SA)	0.863	0.829
Shopping Continuance (SC)	0.831	0.712

Pearson correlation was used to determine the power of a linear relationship between two variables. Pearson's correlation coefficient determines the consequence of a change in one variable when the other variable changes.

- A value of -1 to 1, with a value of -1 implies a total negative linear correlation.
- A value of 0 implies no correlation.
- A value of +1 implies a total positive correlation.

The use of Pearson's correlation revealed a consistent score of +1, which implies satisfactory internal consistency and acceptable reliability of the model's measurement.

Table 8: Statistics and Correlations of Constructs

Pearson Correlation	PU	PEOU	PR	TE	PSP	SA	SC
(PU)	1						
(PEOU)	.722**	1					
(PR)	.524**	.322**	1				
(TE)	.042	.095	-.284*	1			
(PSP)	.277*	.381**	-.204**	.581**	1		

C2 General

(SA)	.487**	.585**	-.212**	.497**	.481**	1	
(SC)	.584**	.558**	.093	.103	.351**	.708**	1
*. Correlation is significant at the 0.05 level (2-tailed).							
**. Correlation is significant at the 0.01 level (2-tailed).							

4.3 Determining the reliability of the study

The Internal consistency of different statements presented in the academic study was determined by calculating Cronbach's alpha using IBM SPSS 27 software. A reliability value of less than 0.6 is considered low, one that is between 0.7 and 0.8 is considered acceptable, and one that is above 0.8 is considered good, according to Malhotra (2004). The below table shows that Cronbach's alpha assessment for each of the constructs of this study revealed scores larger than .70 while the score for Perceived Risk was 0.668, which is deemed suitable as per Hair et al.'s (1998) advice. A suitable benchmark according to Hair et al. (1998) is 0.5. The Cronbach alpha assessment consequently indicated satisfactory internal consistency and is therefore an acceptable model for validation.

Table 9: Statistics and Correlations of Constructs

Construct	Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
(PU)	0.822	0.822	4
(PEOU)	0.870	0.878	3
(PR)	0.668	0.679	5
(TE)	0.702	0.705	4
(PSP)	0.756	0.759	5
(SA)	0.860	0.865	3
(SC)	0.896	0.897	3

C2 General

Explanatory Factor Analysis (EFA) was performed to measure the validity and reliability of each construct. The five independent variables were assessed to determine validity and reliability based on the information collected for this study.

Table 10: Reliability and convergent validity tests

Construct	*Item*	*Factor Loading*	*Corrected item-total correlation*
(PU)	PU_Q1	0.725	0.667
	PU_Q2	0.785	0.673
	PU_Q3	0.801	0.504
	PU_Q4	0.772	0.755
(PEOU)	PEOU_Q1	0.895	0.760
	PEOU_Q2	0.884	0.775
	PEOU_Q3	0.851	0.759
(PR)	PR_Q1	0.820	0.591
	PR_Q2	0.758	0.523
(TE)	TE_Q1	0.836	0.539
	TE_Q2	0.810	0.576
(PSP)	PSP_Q1	0.809	0.711
	PSP_Q2	0.866	0.653
	PSP_Q3	0.804	0.696
	PSP_Q4	0.735	0.551
(SA)	SA_Q1	0.904	0.806
	SA_Q2	0.895	0.755
	SA_Q3	0.902	0.688
(SC)	SC_Q1	0.872	0.771
	SC_Q2	0.864	0.820
	SC_Q3	0.883	0.796

4.4 Statistical hypothesis testing between variables

Statistical hypotheses analyse the strength of the correlation between the dependent and independent variables by using multiple linear regression, including tests for moderating effects, to accept or reject the hypotheses.

C2 General

4.4.1 Results and analysis for hypotheses

4.1.1.5 Multiple linear regression

Multiple regression techniques were used to determine the correlation between the independent variables and the dependent variable as well as to test the moderation hypothesis. Regression is a technique for determining the line of most suitable fit. The regression model line uses the independent variables to predict the outcome or dependent variable. The dependent variable characterises the output. The independent variables characterise the inputs that are verified to ascertain that the predicted outcome is a positive or negative relationship between the variables. A positive result in the regression assessment means that if there is any alteration in the independent variable, the same alteration will occur in the dependent variable.

Regression assessment can be performed to determine or verify different relationships. A P-Value of > or 0.05 or 0.1 (5% or 10% level) is not statistically substantial, while a P-Value of < or 0.05 or 0.1 (5% or 10% level) is statistically substantial.

Table 11 shows the results of multiple regressions with online shopping attitude as the dependent variable. As shown in Table 11's multiple linear regression model:

The main variables were entered into IBM SPSS27 software to test hypotheses 1–4. The standardised beta coefficients of perceived ease of use-online shopping attitude (β= 0.72, p < 0.006) perceived ease of use-perceived usefulness (β= 0.037,
p <0.001), perceived usefulness-online shopping attitude (β=0.088, p <0.001), and online shopping attitude-online shopping continuance (β= 0.070, p<0.001) were all significant. Overall, the regression model explained 62.2% of the variance in the dependent variable Shopping Attitude (R^2 0.631, adjusted R^2 0.622; F 67.109, p< 0.001). It is significant at the 1% level (sig. f =.001), indicating model fitness. These findings support H1–H4: variables entered into the IBM SPSS27 software are positively and significantly related to online shopping attitudes toward online purchases.

The researcher conducted a moderation analysis to investigate whether the relationship between the independent variable and the dependent variable was

C2 General

influenced by a third variable, the moderator variable. Moderation analysis helped the researcher to understand under what conditions the relationship between the independent and dependent variables may change. The researcher ensured that all variables used in the analysis were appropriately scaled and cleaned to address any missing data or outliers. Initially, the researcher conducted a standard linear regression analysis to assess the direct effect of the independent variable on the dependent variable, controlling for any relevant covariates. The regression equation used was of the form: [Dependent Variable] = β0 + β1*[Independent Variable] + β2*[Covariates] + ε. To test for moderation, the researcher extended the standard regression model by including an interaction term between the independent variable and the moderator variable. This interaction term was created by multiplying the scores of the independent variable and the moderator variable. The extended model was of the form: [Dependent Variable] = β0 + β1*[Independent Variable] +β2*[Covariates] + β3*[Independent Variable]* Moderator Variable] +ε. The moderation analysis allowed the researcher to examine whether the interaction coefficient (β3) was statistically significant. If it was, this indicated that the moderator variable influenced the relationship between the independent and dependent variables. The direction and significance of the interaction effect were interpreted to understand the nature and strength of the moderation. To ensure the reliability of the study results, the researcher conducted various robustness checks, including checking for multicollinearity and examining the residual plots. The results of the moderation analysis were reported, and appropriate figures or tables were included to illustrate the interaction effects.

The moderating variables, namely interaction terms (trust, perceived risk, and perceived security protection), were entered into IBM SPSS27 software to test the moderation hypotheses H5-H7. All moderator variables were significant in the regression coefficients. H5 supports the hypothesis that trust will moderate the relationship between online shopping attitude and online shopping continuation since the regression coefficient of the interaction term (i.e., online shopping attitude x trust) was significant (β= 0.029, p = 0.036). The interaction term's regression coefficient (i.e., online shopping attitude x perceived risk) was significant (β = 0.075, p = 0.001), supporting H6 that perceived risk moderates the relationship between online shopping attitude and online shopping continuance. Furthermore,

C2 General

the regression coefficient of the interaction term (i.e., online shopping attitude x perceived security protection /cybersecurity risk) was significant (β = 0.030, p = 0.038), supporting H7 that perceived security protection moderates the relationship between online shopping attitude and online shopping continuance. The interaction model was significant and explained 60.7% of the variance in online shopping attitude because of the main and interaction variables (R^2 0.618, adjusted R^2 0.607, F 54.092, p < 0.001).

The standardised beta coefficients (B) measure the strength of the influence of each independent variable on the dependent variable. The model illustrates the extent of change in the dependent variable caused by one unit of alteration in the independent variables, *ceteris paribus*.

Table 11: Multiple Linear Regression

Variable	Beta value	Std. Error	Beta	t	P-Value
(Constant)	-1.999	1.009		-1.982	0.049
(PEOU)	0.469	0.072	0.389	6.549	0.001
(PEOU)	0.602	0.037	0.722	16.166	0.001
(PU)	0.383	0.088	0.265	4.327	0.001
(SA)	0.744	0.070	0.557	10.680	0.001
Moderator variables					
Shopping Attitude x Trust	0.060	0.029	0.576	2.115	0.036
Shopping Attitude x Perceived Risk	0.559	0.075	0.878	7.439	0.001
Shopping Attitude x Perceived Security Protection /Cybersecurity Risk (CR)	0.062	0.030	0.612	2.082	0.038

4.1.1.6 Normality

A normal P-P plot was drawn up to illustrate the outcomes of the linear regression model, which were examined to determine the normality of the residuals. The P-P plots as illustrated in Figure 8 below provide evidence of normality as the points (dots) are generally along the 45-degree line (cf. Hills, 2014). Furthermore, the histogram shown in Figure 9 indicates a normal distribution of residuals.

C2 General

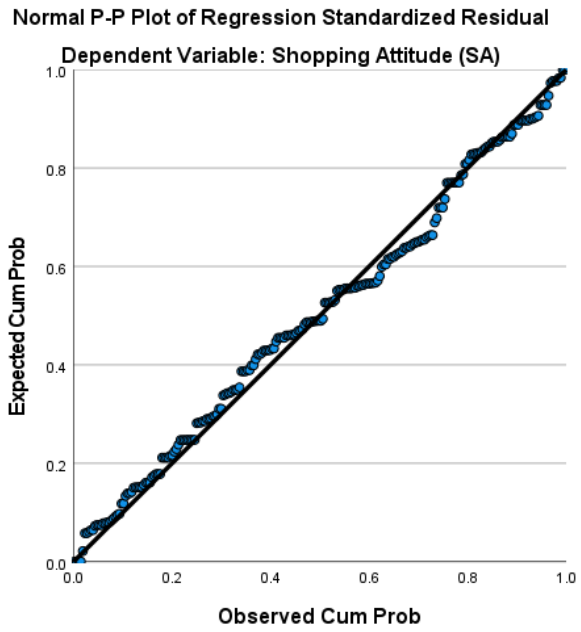

Figure 4.8: Normal P-P Plot of Regression Standardised Residuals

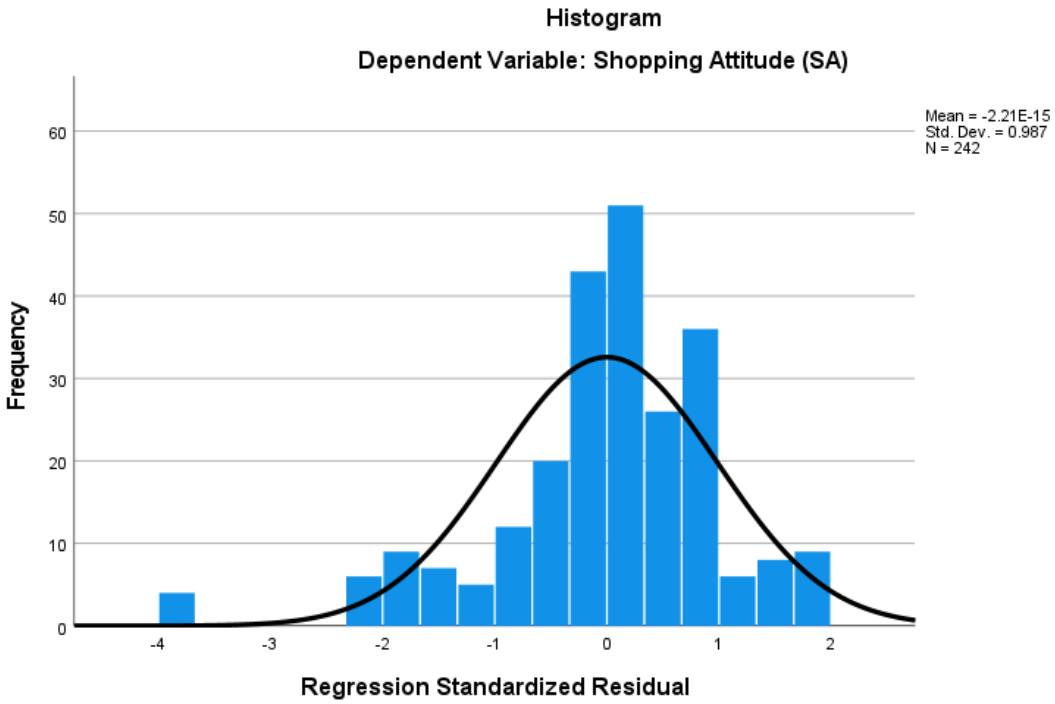

Figure 4.9: Histogram of Regression Standardised Residuals

4.1.1.7 Path coefficient

C2 General

After determining that all construct measurements were consistent, valid and reliable, the researcher moved to the structural model, based on the scale and determining the influence of the measurements on each construct.

A path coefficient signifies the correlation between the hypothesised constructs and standardised values between them. The path coefficients (hypotheses) were statistically significant at the P-Value < or 0.05 or 0.1 (5% or 10% level) and not statistically significant at the P-Value > or 0.05 or 0.1 (5% or 10% level (Hair,2014).

Table 12: Recap of the Multiple Linear Regression

Hypothesis	Path	Path coefficient	T-statistic	P-value	Result
H1	PEOU-SA	0.072	6.549	0.001	Supported
H2	PEOU-PU	0.037	16.166	0.001	Supported
H3	PU-SA	0.088	4.327	0.001	Supported
H4	SA-SC	0.070	10.680	0.001	Supported
Moderator Variables					
H5	SA*TE	0.029	2.115	0.036	Supported
H6	SA*PR	0.075	7.439	0.001	Supported
H7	SA*PSP/CR	0.030	2.082	0.038	Supported

Listed below are the coefficients of the relationships between the multiple constructs and shopping attitudes towards online shopping.

- The Hypothesis 1 results indicate that Perceived Ease of Use (PEOU) is significant (*β*= 0.072, *p*= 0.001) and positively related to Online Shopping Attitude (SA). The standardised path coefficient between PEOU and SA was significant. Thus, **Hypothesis 1 is supported**.
- The Hypothesis 2 results demonstrate that Perceived Ease of Use (PEOU) is significant (*β*= 0.037, *p*= 0.001) and positively related to Perceived Usefulness (PU) toward online purchases. The standardised path coefficient between PEOU and PU was significant. Thus, **Hypothesis 2 is supported**.

C2 General

- The Hypothesis 3 results indicate that Perceived Usefulness (PU) is significant (β = 0.088, p =0.001) and positively related to Online Shopping Attitudes (SA) toward online purchases. The standardised path coefficient between PU and SA was significant. Thus, **Hypothesis 3 is supported**.
- The Hypothesis 4 results indicate that Online Shopping Attitude (SA) is significant (β= 0.070, p =0.001) and positively related to Online Shopping Continuance (SC). The standardised path coefficient between SA and SC was significant. **Thus, Hypothesis 4 is supported.**

Moderation Results:

- The moderator variable Trust is significant (β= 0.029, p=0.036) and will moderate the relationship between Online Shopping Attitude and Online Shopping Continuance, according to the results of Hypothesis 5. As a result, **Hypothesis 5 is supported**.
- According to the findings of Hypothesis 6, the moderator variable, perceived risk, is significant (β = 0.075, p = 0.001) and will moderate the relationship between online shopping attitude and online shopping continuity. As a result, Hypothesis 6 is supported.
- The Hypothesis 7 results indicate that the moderator variable Perceived Security Protection is significant (β= 0.030, p= 0.038) and will moderate the relationship between Online shopping attitude and Online Shopping Continuance. Thus, **Hypothesis 7 is supported**.

4.5 Summary of the results

This research study aimed to investigate the extent to which perceived risk, trust and security risk will shape online shopping behaviour from a South African perspective.

The hypotheses set out in Table 5 were identified as suitable for achieving the objectives of this research. Table 13 presents a high-level summary of the research hypotheses and findings.

C2 General

Table 13: High-level Summary of Hypotheses Results

Hypothesis	Beta	P-value	Effect	Outcome
PEOU has a positive influence on Online Shopping Attitudes.	0.389	0.006	Positive	Supported
PEOU has a positive influence on Perceived Usefulness.	0.722	0.001	Positive	Supported
PU has a positive influence on Online Shopping Attitudes.	0.265	0.001	Positive	Supported
SA has a positive influence on Online Shopping Continuance.	0.557	0.001	Positive	Supported
TE in Online Shopping will moderate the relationship between Online shopping attitude and Online Shopping continuance	0.576	0.036	Positive Moderator effect	Supported
PR will moderate the relationship between Online shopping attitude and Online Shopping Continuance.	0.878	0.001	Positive Moderator effect	Supported
Cybersecurity Risk will moderate the relationship between Online shopping attitude and Online Shopping Continuance.	0.612	0.038	Positive Moderator effect	Supported

A multiple linear regression analysis was performed on IBM SPSS27 software to validate the hypotheses among a sample of 242 respondents. Hypotheses H5 through H7 were supported. The moderating variables Trust in E-commerce (TE), Perceived Risk (PR), and Perceived Security Protection (PSP) were significant and indicated that they would moderate the relationship between online Shopping Attitude and online Shopping Continuance. The rest of the analysis illustrated support for hypotheses H1, H2, H3, and H4, as the relationships between the independent variables' Perceived Ease of Use (PEOU), and Perceived Usefulness (PU) and the dependent variable Online Shopping Attitude (SA) were statistically significant ($p < .001$).

C2 General

CHAPTER 5. DISCUSSION OF RESULTS

5.1 Introduction

This chapter discusses the research results presented in Chapter 4 about the literature review as presented in Chapter 2.

Prior study on internet purchase behaviour has been concentrated on developed economies such as the United States, Europe, portions of Asia, and Australia. Less thought has, however, been devoted to online shopping habits in places like South Africa. Neither firms nor consumers in South Africa are technologically ready and corporate e-commerce adoption is slow (Bianchi & Andrews, 2012).

The goal of the study was to investigate the extent to which perceived risk, trust, and security risks shape South Africans' online shopping behaviour. This study tested a model based on existing literature and developed within the context of TAM theory. This study provides fascinating insights into the online shopping habits of South African consumers.

Multiple linear regression was performed to assess the strength of the correlation between consumers' online shopping attitude and online shopping continuance (dependent variable) and Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Perceived Risk (PE), Trust in E-commerce (TE), and Perceived Security Protection (PSP) (independent variables).

5.2 Discussion related to Hypotheses

This section discusses hypotheses and results to determine the factors that influence consumer behavioural attitudes toward online shopping and shopping in general. This section of the study quantitatively authenticated the proposed research model, which was designed according to the TAM model. Based on this model, the following variables were used: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). To determine consumer behavioural intent to adopt e-commerce and shop online in the South African context, three additional variables were added to the proposed research model: i.e. Perceived Risk (PR),

C2 General

Trust in E-commerce (TE), and Cybersecurity Risk or Perceived Security Protection (PSP). The results are discussed below:

5.2.1 Perceived Ease of Use (PEOU)

This variable was discovered to have a positive influence on online shopping attitudes ($\beta = 0.072$, $p = 0.006$). In comparison with previous literature studies, the outcomes of this study support the outcomes of Al-Smadi (2012); Kim et al. (2009); and Shin and Kim (2008), where PEOU was proposed as a powerful antecedent that influences users' attitudes and behavioural intentions. The study highlights that perceived ease of use directly influences consumers' attitudes towards the adoption of e-commerce and online purchasing.

As a result of this finding, the vendor is advised to introduce an e-commerce site that is easy to use and error-free to increase the adoption of e-commerce. In this study, it is argued that consumers' attitudes toward the vendors will be positively affected by how easy it is to use their websites. As a result, their intention to purchase from that particular vendor will be influenced. According to a recent study by Tobias-Mamina and Maziriri (2019), any newly developed product must include Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) to appeal to the intended consumer. These antecedents have an impact on the attitudes and behaviours of users toward the newly introduced product.

The finding on perceived ease of use as an independent variable construct illustrates that the majority of participants agree that perceived ease of use is a major factor. This will strongly influence customers' intentions to adopt e-commerce and make purchases online. In addition, this study shows that consumers' attitudes toward online shopping have a positive impact on their purchasing intentions. The more positive consumers' attitudes toward an online store, the more likely they are to shop there. This finding supports previous research by Lin (2007), Tobias-Mamina and Maziriri (2019), and others.

C2 General

5.2.2 Perceived Usefulness (PU)

This variable was discovered to have a positive influence on online shopping attitudes (β = 0.088, p = 0.001). In comparison to previous research, the findings of this study support the findings of Taylor and Todd (1995), who discovered that PU shapes positive attitudes toward information systems. The study highlights that perceived usefulness has a direct influence on consumers' attitudes toward using e-commerce systems and making online purchases. According to the TAM theory framework, both PEOU and PU influence the formation of favourable attitudes associated with the use of technology, which, when combined with PU, results in individuals' greater Behavioural Intention (BI) to use the technology. Furthermore, PEOU is expected to have a positive impact on people's perceptions of the technology's usefulness.

The finding on perceived usefulness as an independent variable construct illustrates that the majority of the participants agree that perceived usefulness is a major factor that will significantly influence the consumers' behavioural intentions to use e-commerce and purchase online.

5.2.3 Perceived Risk (PR)

This moderator variable was discovered to moderate the relationship between online shopping attitudes and online shopping continuance (β = 0.075, p = 0.001). In comparison to previous literature studies, the findings of this study support the findings of Lee and Turban (2001), Hsin and Wen (2008), and Tran (2020). Studies have shown that consumer behaviour is considerably impacted by trust and perceived risks. According to Davis et al. (2021), both variables can moderate the relationship between user behaviour, social influence, and product variety. Furthermore, the study discovered that respondents continue to view online shopping as risky, which is in line with prior studies (Bourlakis et al., 2008; Tran, 2020; Gefen et al., 2003). Perceived risk is regarded as one of the most significant barriers to e-commerce adoption, and it also influences online shopping behaviour (Rachbini, 2018). Risks associated with online shopping include financial risks, product risks, seller risks, privacy risks, and security risks (Bianchi & Andrews, 2012). The study findings indicate that consumers are more accustomed to

C2 General

evaluating products through direct contact in traditional transactions; as a result, they are unfamiliar with evaluating product lines through images on an online website. They may believe that online shopping is risky. Customers' purchasing intentions decrease if they believe the online website contains risks and vice versa. According to the study, trust may play an important role in providing consumers with the assurance they need when conducting online transactions.

This study supports previous findings that perceived risk is the most influencing factor in online shopping intention. As a result, stores must identify suitable ways to decrease perceived risks to strengthen consumers' purchase intent. The hypothesis that perceived risk (PR) will moderate the relationship between online shopping attitude (SA) and online shopping continuance (SC) is supported.

5.2.4 Trust in E-commerce (TE)

This moderator variable was discovered to moderate the relationship between online shopping attitudes and online shopping continuance (β=0.029, p = 0.036). The outcome of the study supports the literature from McKnight et al., (2002), Carter and Campbell (2011), Choi and Kim (2012), and Davis et al., (2021), which indicates that trust is a key factor that influences behavioural intentions for the adoption of e-commerce and the continuation of online shopping. Trust and social influence are likely to influence user behaviour (Aseri, 2021). When consumers have trust in the information provided on the site, it is believed that they are influenced by business website information (Lee & Turban, 2001). The findings of this study are consistent with the Davis et al., (2021) study that trusts moderates the relationship between social influence and user behaviour, and product variety and user behaviour.

Trust can be defined as an individual's perception that institutional regulation and legislative guidelines make the environment trustworthy and safe for business transactions. Trust has been argued by many scholars as an essential component of successful commerce since consumers are reluctant to make purchases without trusting the seller (Gefen, 2002; Urban et al., 2000). According to the study, the majority of online shoppers are still hesitant to make a purchase and continue shopping online. Although the interaction term (i.e., online shopping attitude x trust)

C2 General

has a P-value of 0.036, the study proves that one of the major impediments to South African consumers' online shopping is a lack of trust. Lack of trust is also cited as a major barrier to online shopping (Ha & Nguyen, 2016). In comparison to other less-developed African nations, it was anticipated that consumers would feel more secure shopping online in a nation like South Africa.

For trust to qualify as a benefit, online consumers must perceive that the online system is trustworthy, reliable, and beneficial for users. For a transaction to happen, consumer trust has to be built. Thus, trust between consumers and online stores is the foundation for online shopping (Ha & Nguyen, 2016). Throughout all exchange relationships (McKnight et al., 2002), trust is considered to be a key element, and it influences both online and traditional consumer behaviour (Ha & Nguyen, 2016). As a result, one of the primary reasons consumers avoid shopping online, according to this study, is a lack of trust. The hypothesis that trust in online shopping will moderate the relationship between online shopping attitude (SA) and online shopping continuance (SC) is supported.

5.2.5 Perceived Security Protection

This moderator variable was discovered to moderate the relationship between online shopping attitude and online shopping continuance ($\beta = 0.030$, $p = 0.038$). In comparison to previous literature studies, the findings of this study support the findings of Jaiswal and Kar (2018), Powell et al. (2012), and Makhitha et al., (2019), in which security risk was identified as one of the factors influencing consumers to shop online. According to the study, consumer behavioural intentions to use e-commerce are directly influenced by privacy and security.

This finding implies that to increase consumer behavioural intention to adopt e-commerce and continue shopping online, sellers should create an environment that demonstrates that e-commerce or online shopping systems are error-free, that consumer personal information is securely stored, and that consumers receive accurate and reliable results. Makhitha et al., (2019), who show that card payment security is a concern for buyers along with the disclosure of personal data at the point of purchase, support the study's findings. In addition, Rudansky-Kloppers (2016) suggests that internet merchants should cover problems of fraudulent

C2 General

transactions, thefts and other issues relating to privacy and security. Retailers must communicate all these to their customers by utilising multiple channels of communication.

Perceived security risk, according to Mattison Thompson et al., (2019), has a negative relationship with application adoption. The Privacy Calculus model predicts that consumers will provide sensitive personal and private information only if the risk of disclosure appears to be worth it. Consumers are more likely to use online application methods once their environmental and behavioural concerns have been addressed. Consumers are willing to transact online if their security risk perceptions are low, according to the theory of reasonability (Kim et al., 2008). Consumers' trust in security may grow over time as a result of ongoing education, which has a powerful positive impact on consumer attitudes toward security.

The findings on perceived security protection as an independent variable construct highlight that the majority of participants agree that perceived security protection is a major factor that will influence consumers' behavioural intentions to adopt e-commerce. Perceived Consumers' behavioural intentions and attitudes toward online shopping are influenced by security protection (Kim et al., 2008). As a result, it is an important consideration in driving e-commerce adoption and attracting more consumers to shop online. The hypothesis that cybersecurity risk will moderate the relationship between online shopping attitude and online shopping continuance is supported.

C2 General

CHAPTER 6. CONCLUSIONSAND RECOMMENDATIONS

6.1 Introduction

This chapter presents the main findings of this study. The research objectives are addressed in the conclusions. Based on these findings, recommendations for the impact of perceived risk, trust, and security risk on South African online shopping behaviour are made.

A quantitative assessment was used as the research method. The study concentrated on the South African context, and an online questionnaire was distributed to qualified South African consumers and academics.

Davis's (1989) theoretical framework Technological Acceptance Model (TAM) was used in this study. This model was used to investigate the impact of external factors on consumers' internal beliefs, attitudes, and intentions regarding online shopping. The TAM is a key instrument used by researchers to identify the factors that influence user attitudes toward e-commerce adoption. The TAM was chosen as the central academic framework for this study because it was a critical factor in the research. (See Figure. 2.3.2.).

The research objectives for this study are as follows:

1. To examine how Perceived Risk influences Trust.
2. To examine how South African consumers' risk perception and trust influence online shopping behaviour.
3. To determine the security risk factors that influence consumers' attitudes towards online shopping in South Africa.
4. To examine the mediation effect of online shopping attitude on the relationship between online shopping continuance, and PEOU on one hand and PU on the other.

C2 General

6.2 Conclusions for Research Objectives

Online shopping has become increasingly popular and widely used as technology and the internet advance. This implies that online store marketers should identify and comprehend the various factors that influence customers' purchasing behaviour when it comes to online shopping. In addition, Rahman et al., (2019) suggest that marketers can identify a variety of strategies as a way of increasing customer satisfaction through the enhancement of the buying experience.

Researchers have found that online shopping behaviour differs from brick-and-mortar purchasing behaviour because of factors such as internet connectivity, the aesthetics of websites, security, the experience of customers, and their age (Rahman et al., 2019).

This study tested five independent variables based on the modified TAM model. These were Perceived Ease of Use (PEOU), Perceived Usefulness (PU); Trust in online shopping/ E-commerce (TE), Perceived Risk (PR) and Cybersecurity Risk (CR)/ Perceived Security Protection (PSP).

According to the findings, the independent variables perceived ease of use (PEOU) and perceived usefulness (PU) were found to be significant. Furthermore, trust in online shopping/e-commerce (TE), perceived risk (PR), and cybersecurity risk (CR)/perceived security protection (PSP) were found to be significant moderators of the relationship between online shopping attitude and online shopping persistence. These variables were found to be significant predictors of consumer attitude toward online shopping and online shopping persistence in the South African context. By existing literature, this result supports the finding that the consumer's perception of use affects their online shopping behaviour (Kim et al., 2008; Kim & Forsythe, 2008; Venkatesh & Davis, 2000). Previous research found similar results when convenience-related constructs like perceived benefit, innovativeness, and so on were used to study purchase intention rather than perceived usefulness (Chong, 2008; Kim et al., 2008; Venkatesh & Davis, 2000 & Makhitha & Ngobeni, 2021).

C2 General

Trust requires a perception of risk, according to Kaluscha and Grabner-Krauter (2003). Also, Lee and Turban (2001) state that trust is incomplete without consideration of risk in their study. Eastlick et al. (2006) provide additional evidence that trust has a negative relationship with perceived risk. The perception of risk is one of the major barriers to purchasing goods and services online in many other studies. Gefen et al. (2003b) discovered no link between perceived risk and online shopping intent. The results align with Hsin and Wen (2008), which revealed that despite growing assurance in online shopping and technology, the conception of risk still adversely affects customer perceptions. Purchase intent, customer relationship building, and website loyalty have all been influenced by trust (Bhatt & Nagvadia, 2021). Although respondents to this study's survey believe that perceived risk and trust will moderate the relationship between online shopping attitude and online shopping compliance. A significant relationship exists between perceived risk and trust when it comes to online shopping behaviour, although the beta coefficient of perceived risk is higher than the beta coefficient of trust. As a result, perceived risk has a greater impact on online shopping behaviour than trust.

According to the South African Digital Customer Experience (CX) Report of 2021 (Ahlfeldt, Reekie, & Stewart, 2021), 96 per cent of consumers would only increase their online spending if the online stores improved the shopping experience (i.e. cybersecurity threats, security of online shopping, etc.). Security has been shown in previous studies to directly influence purchase intentions, and trust can also indirectly influence purchase intentions through an influence on perceived risk (Kim et al., 2008). The perceived security protection results were found significant and will moderate the relationship between online shopping attitude and online shopping continuance.

This study’s results showed that trust, perceived risk and security have a positive impact on consumers’ attitudes toward shopping and online shopping. Trust is particularly significant when shopping online. This is because the consumer does not have direct contact with the seller or the products they intend to purchase in an online environment (Pavlou, 2003). Gefen et al., (2003) found that consumers are deterred from shopping online primarily due to a lack of trust. This study supports those findings. Kim et al., (2008) found a strong positive correlation between consumers' trust and their purchase intention and a strong negative correlation

C2 General

between consumers' perceived risk and their willingness to purchase. In e-commerce, trust reduces perceived risk to a significant degree, thus addressing the risk problem (Luhmann, 1988).

The findings of the study help to clear up a lot of misconceptions about online shopping among various retailers. They can increase retailers' and managers' willingness to encourage consumers to shop online. It is crucial to consider the significant factors identified in the research before estimating how consumers will behave when shopping online. These factors include perceived security protection, perceived risks, perceived usefulness, trust in e-commerce, and, most importantly, perceived ease of use. Kim et al. (2007) discovered that consumer attitudes are a strong predictor of purchase behaviour. According to their findings, the effects of trust, perceived risk, and perceived benefit on purchase intentions ultimately influence consumers' actual purchase decisions.

Per the discussion above, this study adds to the literature on South African online shoppers and the use of e-commerce to improve online shopping. The primary goal of the study was to fill a research gap concerning the influence of perceived risk, trust, and security in the South African context.

6.3 Recommendations

The current study's analysis revealed some significant findings concerning online shopping behaviour. Retailers, marketers, and companies will find these findings useful in offering their products online. The following are recommendations made based on the study results and conclusions:

The findings of the study could help e-tailers devise future strategies for serving customers' needs and generating customer loyalty (Daroch et al., 2020). There is a strong relationship between reputation and satisfaction, which is then associated with consumer loyalty (Casalo et al., 2008). Consumers prefer online retailers who require less information from them over those who require extensive personal information (Lawler, 2003).

C2 General

E-commerce site vendors should build secure transaction systems by adopting trustworthy and safe security systems and informing customers about a wide range of advanced payment technologies and websites' security approval symbols to encourage consumers to continue making purchases in the future (Bhatt & Nagvadia, 2021). By increasing the number of payment options, particularly cash on delivery, consumers will be less likely to provide credit card information. Furthermore, consumers should not be required to provide personal information because this may be perceived as a threat, resulting in a negative purchasing attitude.

Online sellers should create a secure website that is easy to use. This will provide consumers with a more enjoyable shopping experience as well as a more convenient product search and navigation system on their website. Furthermore, to influence customers, retail stores could consider risk-reducing strategies such as simple return and exchange policies.

Online retailers should create shopping applications that enable customers to easily purchase their products or services online via portable devices. Moreover, the vendor should make sure that the applications work well on a wide range of smartphones and also allow customers to easily purchase online.

Further, online sellers can use multiple techniques to convince consumers to order online, like identifying negative aspects and solving customer problems, to convert non-online shoppers and irregular online consumers into regular ones. It is essential to make sure that the product quality, catalogue diversity, and range of options can satisfy customer demands when operating an online store. In order to gain the trust of customers, e-retailers must improve the quality of their products. They can do this by providing complete seller information and the seller's history, which should increase consumer trust in that seller (Daroch et al., 2020).

Out of the respondents, 56.6% were females and 43.4% were males. To encourage male shoppers to buy more online, marketers ought to establish a shopper-friendly environment and offer appealing incentives, thus urging customers to increase their purchasing behaviour in the online marketplace. Marketers must educate both gender respondents as well as inexperienced

C2 General

internet shoppers about the mechanics of online shopping and the purchasing process. They will develop more discerning purchasing habits by learning and using the internet for online shopping.

6.4 Suggestions for future research

In line with the findings, the following topics could be researched further:

Although this study focused on South African consumers, the findings and recommendations can be useful to online retailers in other African countries. Future research should concentrate on rural areas, keeping in mind that consumers' e-shopping preferences are influenced by a variety of factors and that technology is constantly evolving. This will assist marketers in determining the most effective strategies to use for both rural and urban consumers. Future research should look into the growth and use of cell phones and tablets for e-commerce, as well as the incorporation of these portable apps into users' online shopping habits. Studies on the design of digital platforms for specific types of devices will contribute to the body of knowledge. South African retailers can use the suggestions in this study to invent different platforms for shopping online and also enhance the current ones.

C2 General

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C2 General

APPENDIX A. CONSISTENCY MATRIX

Table14: Consistency Table: Research Questions, Propositions, Data Collection, and Data Analysis

RQ #	State Research Objective	hypothesis	State Research Questions	Data-collection detail	Data-analysis method
1	To examine how Perceived Risk influences Trust.	1	How Perceived Risk Influence Trust?	Online Survey	Quantitative method
2	To examine how South African consumers' risk perception and trust influence online shopping behaviour.	2	How do South African consumers' risk perception and trust influence online shopping behaviour?	Online Survey	Quantitative method
3	To determine the security risk factors that influence consumers' attitudes towards online shopping in South Africa.	3	What are the security risk factors that influence consumers' attitudes towards online shopping in South Africa?	Online Survey	Quantitative method
4	To examine the mediation effect of online shopping attitude on the relationship between online shopping continuance, and PEOU on one hand and PU on the other.	4	What is the effect of online shopping attitude on the relationship between online shopping continuance and PEOU?	Online Survey	Quantitative method

C2 General

APPENDIX B. ONLINE QUESTIONNAIRE

Please check the alternative that applies to you:

1. Are you… Male ☐ Female ☐
2. Age: 18-29 years ☐ 30-40 years ☐ 40 years and above
3. Educational level: High school or prior ☐ College ☐ Diploma ☐ Bachelor's degree ☐ Honours or Post-graduate ☐ Master's degree ☐ Doctoral degree ☐
4. Income level: R0.00 < R4000 ☐ R4000 – R6000 ☐ R6000 and above

		Likert scale	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Constructs		**Please select your level of agreement or disagreement with the following statement**	**Strongly disagree**	**Disagree**	**Somewhat disagree**	**Neither agree nor disagree**	**Somewhat agree**	**Agree**	**Strongly agree**
Perceived Usefulness (PU) Source: (Schaupp, 2010)	**1**	*I believe e-commerce will be useful, as online shopping has more advantages than traditional shopping ways available anywhere and anytime*							
	2	*If I were to shop online, I believe that it would make my shopping experience a lot more efficient*							
	3	*The use of e-commerce will increase the number of people participating in online shopping*							
	4	*Good access to e-commerce would increase my likelihood of doing online shopping if I had access to it.*							
Perceived Ease of Use (PEOU) Source: (Schaupp, 2010; Chong, 2008)	**1**	*It is generally easy for me to use online shopping websites since the majority of them are user-friendly.*							
	2	*On the online shopping site, I find it easier to search for items that are of interest to me.*							
	3	*Having purchased from an online shopping website in the past, I am familiar with the process of buying products.*							
Perceived Risk (PR) (Venkatesh, Morris, & Davis, 2003)	**1**	*My concern would be whether the online store would ensure transaction security if I purchased a product from it.*							
	2	*Compared with more traditional methods of shopping, online shopping carries a higher risk of defective or nonworking products.*							

		Likert scale	1	2	3	4	5	6	7
Constructs		**Please select your level of agreement or disagreement with the following statement**	**Strongly disagree**	**Disagree**	**Somewhat disagree**	**Neither agree nor disagree**	**Somewhat agree**	**Agree**	**Strongly agree**
	3	*Online shopping entails a higher level of financial risk than more traditional methods of shopping (i.e. fraud, difficult returns).*							
	4	*The more I consider purchasing from online stores, the more concerned I become about the site's collection of too much personal information.*							
	5	*Online vendors selling my personal information to third parties without my permission concerns me as I consider purchasing from their sites.*							
Trust in E-commerce (TE) (Venkatesh, Morris, & Davis, 2003)	**1**	*My belief is that there is a high level of trustworthiness associated with shopping online.*							
	2	*As far as I'm concerned, websites that sell goods and services online give the impression that they keep their promises.*							
	3	*As a consumer, I believe that online stores make me feel safe about giving them my personal information.*							
	4	*Whenever I buy something online, I feel like stores follow their rules and terms.*							
Perceived Security protection (PSP) (Lake, 2019)	**1**	*The security measures implemented by online stores protect online consumers from cyber-attacks, in my opinion.*							
	2	*Online stores have a secure system for accepting electronic payments.*							
	3	*When I decide to pay for my online purchases with my credit card, I feel safe doing so.*							
	4	*On the Internet, online vendors frequently take precautions to guard against accidental alteration or destruction of transactional information.*							
	5	*If there are risks to buying from a brand, I will stop buying from them right away*							
Shopping attitude (SA) (Lake, 2019; Rachbini, 2018)	**1**	*Buying the products online is likely to be my preferred method of shopping.*							
	2	*It is likely that I will recommend online shopping.*							
	3	*In the event that I need the products that I am going to purchase, I am likely*							

		Likert scale	1	2	3	4	5	6	7
Constructs		**Please select your level of agreement or disagreement with the following statement**	**Strongly disagree**	**Disagree**	**Somewhat disagree**	**Neither agree nor disagree**	**Somewhat agree**	**Agree**	**Strongly agree**
		to make another purchase from online stores.							
Shopping Continuance (SC) Sources: (Bhattacharjee, 2001b; Schaupp, 2010)	**1**	*In the near future, I plan to continue using Online Shopping sites.*							
	2	*My prediction is that I will return to online shopping sites in the future.*							
	3	*I would use online shopping sites again if I wanted to do some shopping.*							

APPENDIX C. ONLINE INTERVIEW INFORMATION SHEET

Dear Sir / Madam,

My name is Mthokozisi Hlatshwayo and I am a Masters' student in Digital Business at the University of the Witwatersrand, Johannesburg. As part of my studies, I have to undertake a research project, and I am investigating "The influence of perceived risk, trust and security on online shopping behaviour: A South African perspective" under the supervision of Professor Thomas Dorson Anning.

As part of this study, if you are between the ages of 18 years and above and if you engage in online shopping, I would like to invite you to participate in an online questionnaire. This activity will involve you answering multiple-choice questions and will take about 10-15 minutes to complete. There will be no personal costs to you if you participate in this project.

Your participation is voluntary, and you can withdraw at any time without penalty. Your participation is anonymous and only aggregated data will be reported. By completing the survey, you indicate that you voluntarily participate in this research.

If you have any concerns or complaints regarding the ethical procedures of this study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), telephone at +27(0) 11 717 1408, email: hrecnon-medical@wits.ac.za

If you have any questions during or afterwards about this research, feel free to contact me or my supervisor at the details listed below.

Yours sincerely,

Researcher: Mthokozisi Hlatshwayo **Email:** 2176222@students.wits.ac.za

Cell: +27 71 190 3727

Supervisor: Prof. Thomas Dorson Anning **Email:** thomas.dorson.anning@wits.ac.za

Tel: +27 11 717 3951

C2 General

APPENDIX D: PARTICIPANT CONSENT FORM

AGREEMENT TO PARTICIPATE IN ONLINE SURVEY

TITLE: THE INFLUENCE OF PERCEIVED RISK, TRUST AND SECURITY ON THE ONLINE SHOPPING BEHAVIOUR: A SOUTH AFRICAN PERSPECTIVE

Study Leadership: I am Mthokozisi Hlatshwayo, a Master's student in Digital Business at the University of the Witwatersrand, Johannesburg. I am asking you to take part in my Master's Dissertation research project. Professor Thomas Dorson Anning is supervising this study.

Purpose: The purpose of this study is to examine the influence and factors associated with perceived risks (product risk and delivery risk), trust, trustworthiness, security, and privacy risks on South African consumers' online shopping behaviour, attitude, and purchase intentions.

Eligibility: To take part in this study, you must be over the age of 18 and currently live in South Africa.

Participation: During the study, you will take an online survey asking about your online shopping experience, trust in online shopping, security risks concerns and other e-commerce-related questions. Completing this questionnaire will take about 20 minutes.

Risks of participation: The risks you run by taking part in this study are minimal. You are free to skip any question that makes you uncomfortable or stop the survey at any time.

Compensation: As a participant in this study, you will not be remunerated for your participation, and no data that is collected from you will be shared or sold by this study for any commercial gain.

Voluntary participation. Your participation in this study is completely voluntary. You may stop or withdraw from the study at any time, or refuse to answer any particular question for any reason without it being held against you. Your decision

C2 General

on whether or not to participate will not affect your current or future connection with anyone at the University of the Witwatersrand.

Confidentiality: This anonymous online study is being conducted through the University of the Witwatersrand Qualtrics survey software. No identifying information about you will be collected. To protect the anonymity of your responses, no IP addresses, email addresses, or identifying information will be collected, and Qualtrics survey software uses industry-standard security methods to protect data transmission and storage. Survey data will be stored only on a password-protected computer. All individual answers will be presented in summary form in any papers, books, talks, posts, or stories resulting from this study.

Consent: If you click "Yes" below, you are indicating that you understand the information on this form, that any questions you may have about this study have been answered, and that you are eligible to participate in this study. This link will direct you to the survey. Clicking the “No” entry will close this page and exit the survey.

Yes, I am over 18 and live in South Africa, and I would like to participate

No, I do not want to participate

C2 General

APPENDIX E. ETHICS CLEARANCE CERTIFICATE

Graduate School of Business Administration
University of the Witwatersrand, Johannesburg

Wits Business School Ethics Committee
Constituted under the University Human Research Ethics Committee (Non-Medical)

Ethics Clearance Certificate

Ethics protocol number: WBS/DB2176222/996
This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below).

Project title	The influence of perceived risk, trust and security on the online shopping behaviour: a South African perspective
Investigator / Researcher	Mr Mthokozisi Hlatshwayo
Nature of Project	MM (Digital Business)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed anonymity and confidentiality.
Issue Date of Certificate	2022-12-20
Expiry date	Date of submission of the project / research report
Chairperson	Prof Anthony Stacey ☎ +27 11 717 3587 +27 82 880 4531 anthony.stacey@wits.ac.za

C2 General

APPENDIX F. TURN-IT-IN

