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The significance of key constructs on consumer purchase intention in online retail in a Covid-19 climate

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ABSTRACT

The Covid-19 pandemic has added to the complexity of an already changing world due to its unexpected, rapid, and fatal impact. Countries, industries, businesses, societies, and individuals were not able to predict or plan for such an event. However, an unintended consequence of the pandemic is its impact on online retail, both electronic and mobile commerce.

In South African, the online retail market is in its infancy, with a significantly lower online retail to total retail share than global markets. Therefore, there is an opportunity for businesses to capitalise in the current environment to increase activity and transactions in online retail.

This study aims to conduct a quantitative analysis to identify the significance of key constructs associated with online retail consumer purchase intention (PI) in South Africa (SA) in a Covid-19 environment. The extended Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology-2 (UTAUT2) model were used as a basis of the study. The key constructs in these models are risk, trust, Perceived Usefulness (PU), Perceived Ease of Use (PEOU), price value (PV), and Facilitating Conditions (FC). The models were adapted further by including Covid-19, a situational factor, as a key construct in determining consumer PI in online retail. The moderation impact of Covid-19 on risk, trust, PU, PEOU, PV, and FC on consumer online PI was also tested in this research.

The research employed a quantitative statistical modelling technique. An online survey using the Qualtrics platform was conducted with a sample size of 368 adult participants with online shopping experience based in SA. The main structural equation model was tested using maximum likelihood covariance-based modelling.

This study shows that the most significant constructs in determining consumers' online retail PI in the current environment in SA are Covid-19 and PEOU. In addition, online shopping experience was an additional factor with a significant impact. This factor was initially included as a control variable and ultimately in the

final model. The moderation impact of Covid-19 was significant on risk, trust, PU, PEOU, and PV.

The implications of this study provide many opportunities for businesses to focus on to become agile and innovative to drive their online sales. The key constructs that businesses can focus on in the short term are exploiting the opportunities presented by Covid-19, placing emphasis on consumers PEOU, and encouraging consumers to gain online retail experience. This needs to be done without overlooking the hygiene factors of trust, risk, PU, PV, and FC, which still need to be in place. The results of following such an approach will provide new sales, repeat purchases, and growth of the customer base.

The role of SA's Government is just as critical as that of businesses in driving online retail. If anything Government can be the catalyst that can ignite businesses to become innovative and drive the online retail sector. This can be done by improving the FC of online retail through infrastructure, regulation and promotion of e-services, thereby providing digital access to consumers and increasing their online experience. The concerted effort by both the private and public sector will result in lasting social and economic benefits for business, consumers and the country.

KEY WORDS: *Covid-19, E-Commerce, Purchase Intention, Technology Acceptance Model, Unified Theory of Acceptance and Use of Technology 2*

DECLARATION

I, Eden Pillay, declare that this research report is my own work, except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Name: Eden Pillay Signature: 

Signed at Sunninghill

On the 28 day of February 2021

DEDICATION

My supervisor Dr Thembekile Mayayise has been exceptional in providing guidance throughout the entire research process. She has provided much-needed direction during the process and ensured that the research is succinct and valuable. I am grateful to Dr Mayayise for all her supervision, and it was a pleasure working with her during the year.

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LIST OF ACRONYMS

Acronym	Definition
4IR	Fourth Industrial Revolution
B2B	Business to Business
B2C	Business to Consumer
C2C	Consumer to Consumer
Covid-19	Coronavirus
E-Commerce	Electronic Commerce
FC	Facilitating Conditions
ICT	Information, Communication and Technology
M-Commerce	Mobile Commerce
PEOU	Perceived Ease of Use
PU	Perceived Usefulness
PV	Price Value

TAM	**Technology Acceptance Model**
UTAUT	**Unified Theory of Acceptance and Use of Technology**
UTAUT2	**Unified Theory of Acceptance and Use of Technology 2**
WHO	**World Health Organisations**

CHAPTER 1. INTRODUCTION

1.1 Purpose of the study

This quantitative study aims to identify the significance of key constructs that impact online retail consumer perceptions in a Covid-19 environment in South Africa (SA). The study is based on the extended Technology Acceptance Model (TAM) of Pavlou (2003) and Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model of Venkatesh, Thong, and Xu (2012). The key constructs in the TAM model are risk, trust, perceived usefulness (PU), and perceived ease of use (PEOU). Price value (PV) and facilitating conditions (FC) from the UTAUT2 model were also added as key constructs to the model. The model was adapted further by including the Covid-19 pandemic, a situational factor, as a key construct to determine consumer purchase intention (PI) in online retail. Moreover, relationships of the constructs on consumers' online PI and the moderating effect of Covid-19 on other constructs in the model were tested.

Figure 1 is the conceptual model depicting the focus of the study.

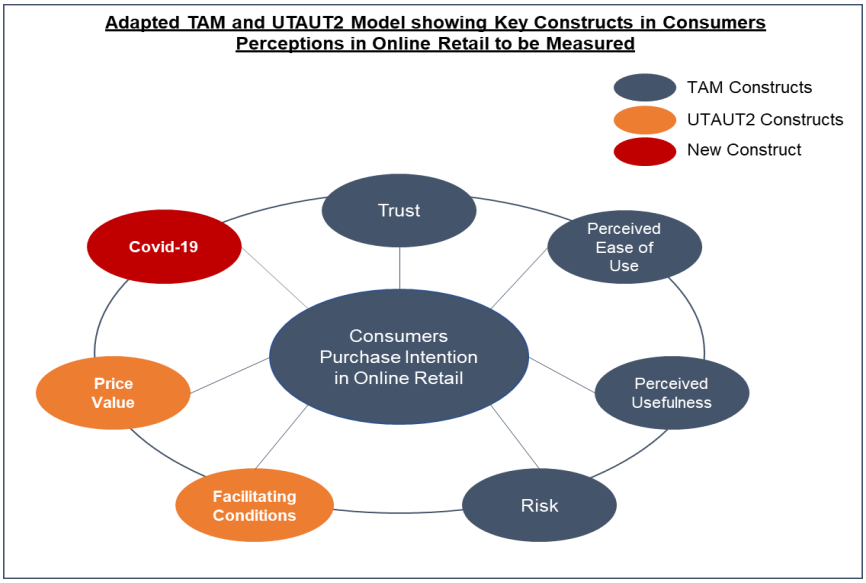


Figure 1 Conceptual Model of the Study (Hitchins, 2016)

1.2 Context of the study

1.2.1 *Covid-19*

Covid-19, which causes respiratory infections, has resulted in 50,266,033 confirmed cases of infection, 1,254,567 confirmed deaths, and 219 affected countries as at November 9, 2020 (WHO, 2020). Infection from Covid-19, first detected in Wuhan, China, in December 2019, has rapidly spread across the world (WHO, 2020). The global pandemic has led to lockdowns in many countries, negatively affecting economies, societies, and individuals globally. The United Nations Secretary General described the pandemic as the worst humanitarian crisis since World War 2 (Chen, 2020). Extensive social distancing is affecting the livelihoods of people in all countries, including SA, and both small and large businesses are at risk of shutting down in the near future.

The Covid-19 pandemic has, therefore, added to the complexity of an already changing world due to its unexpected, rapid, and fatal impact. Countries, industries, businesses, societies, and individuals were not able to predict or plan for the catastrophe. The pandemic will have lasting consequences, contributing to shaping the global future.

An unintended consequence of Covid-19 is its effect on online retail, both electronic and mobile commerce. Consumers fearful of viral exposure prefer shopping online for essential commodities, which reduces visits to physical stores. What this means for the future of online retail need to be unravelled. Until recently, there were no medications or vaccines for the infection (WHO (2020). In 2020, the WHO predicted that formulating a vaccine may take 18 to 24 months (WHO, 2020). Even after effective vaccines are rolled out, implementation is a challenge in many countries. Countries will not remain in a lockdown status for 18 to 24 months; however, as the lockdown and social distancing rules relax, consumers are going to constrain their social interactions. This will result in consumers wanting to find alternative mechanisms to purchase goods and services instead of using face-to-face physical channels. Therefore, the next 18 to 24 months and beyond is critical for businesses to understand the factors that

drive online sales and the potential additional value it can generate. Covid-19 provides an opportunity for businesses to drive their online retail, which benefits both consumers and businesses.

1.2.2 *Online Retail*

E-commerce is not limited to purchasing and selling of goods and services. It also involves pre-sales and post-sales activities, such as searching, browsing, enquiry, order fulfilment, servicing, maintenance, and after-sales support (Chaffey, Hemphill, & Edmundson-Bird, 2019). The Internet allows e-commerce to reduce search or transaction costs on both sides of the market (supply and demand), which creates a desirable proposition for both consumers and organisations (Bakos, 2001).

From a retail perspective, B2C, B2B, and C2C are the primary models in e-commerce (Lee, 2001). This study focuses on online retail in a B2C context.

In South Africa, Takealot and Gumtree rank among the top 10 list of South African leading websites visited, with approximately 7-9 million views a month (Hootsuite, 2019). According to Hootsuite, 69% of the population have a bank account, only 8.9% have a credit card, and 19% have a mobile money account (Hootsuite, 2019). Among them, only 14% make purchases or pay bills online (Hootsuite, 2019).

In SA, there is a significant difference between the percentage of internet users who visit an online store and those who eventually purchase a product (i.e., 92%-55%) (Hootsuite, 2019). The percentage of internet users that use mobile devices to make online purchases is 38% (Hootsuite, 2019).

In SA, the online retail market is still immature. In 2018, online retail spend amounted to R14bn, which represents a mere 1.4% of the total retail sales (Worx, 2019). This is significantly less than the global share of online retail to total retail sales of about 15%. This was confirmed by Steyn and Mawela (2016), who reinforced the considerable underperformance of online retail in SA. However,

the Covid-19 environment provides an opportunity for businesses to increase activity and transactions in the online retail market.

1.2.3 *SA's Digital Maturity*

The current fourth industrial revolution (4IR) is changing the economic and social landscapes of businesses and countries (Baller, Dutta, & Lanvin, 2016). The convergence of physical, digital, and biological technologies is altering several aspects of people's lifestyles and the manner they interact with each other and businesses (Baller et al., 2016). This rapid influx and evolution of new technology have enabled organisations to enhance the efficiency of rendered services, create competitive advantages, strengthen market positions, introduce new products, and service customers in different ways (Ustundag & Cevikcan, 2017).

The World Economic Forum (WEF), The Economist Intelligence Unit (EIU), and The Fletcher School at Tufts University (FSTU) have created frameworks to measure a country's digital maturity (Baller et al., 2016; Chakravorti & Chaturvedi, 2017; EIU, 2018).

SA's ranks 65 in digital maturity among 151 countries in the WEF networked readiness index, 46 among 82 countries in the EIU technological readiness rank, and 43 among 60 countries in the FSTU digital evolution index (Baller et al., 2016; Chakravorti & Chaturvedi, 2017; EIU, 2018). SA stands in the middle of the ranking based on these indices, indicating the need for immense measures and critical decisions to move the country's positioning.

These indices encompass several factors, such as ICT infrastructure and access to technology, that countries, specifically SA, must focus on to improve their digital maturity. One of those factors is e-commerce which is critical to driving digital maturity using a bottom-up approach (Baller et al., 2016; Chakravorti & Chaturvedi, 2017; EIU, 2018). It will have a knock-on effect on other areas of digital maturity, which will result in an accelerated rate of digital maturity improvement. For instance, growth in SA's online retail can improve the digital skills of the population, contributing to growth and innovation of digital

infrastructure, as well as improvement in regulatory and legal frameworks governing platform business models.

1.2.4 *Opportunity for Businesses*

SA's debt-to-GDP ratio is 62%, with an estimated growth to 91% in 2023 (Gossel & Koelble, 2020). Further, the economy is estimated to contract by 2.5% within 2023 (Gossel & Koelble, 2020). These concerning signs call for immediate initiatives to kickstart the economy. Therefore, digital technologies, which allow businesses of all sizes to develop low-cost online business models, can be a driver of economic growth.

Businesses can capitalise on the pandemic-induced changes in consumer behaviours (Mey & Ridder, 2020). The Covid-19 pandemic has altered the manner individuals interact and consume goods and services in their daily lives. The Board of Innovation calls this new way of life the "low touch economy" (Mey & Ridder, 2020). The board defines the low touch economy as a world that is different from what people have experienced in the past; it is a world that will be shaped by Covid-19, with lasting effects on the interactions and behaviours of individuals (Mey & Ridder, 2020). According to Mey and Ridder (2020), the low touch economy "will change how we eat, work, shop, exercise, manage our health, socialise, and spend our free time - at an unprecedented rate of change" (p.2).

Online retail is the focus of this study and extremely critical because of the acceleration potential of online retail due to the pandemic. The change in consumer behaviour affects all businesses, not only existing online retailers or retailers with online capabilities. It also provides an opportunity for traditional businesses to alter their business models and revenue streams, develop new products and services, and explore alternative delivery channels. These alterations will cause a ripple effect in improving digitisation in the economy, society, and population.

1.3 Research problem

According to Clement (2020), online retail is expected to grow at a rate of 56% globally. The pandemic environment will accelerate this growth even more, implicating the importance of online retail for businesses. Importantly, online retail in SA, in terms of percentage of total retail sales, needs to scale up to be on par with other countries.

To succeed in online retail, businesses need to understand consumer perceptions of online retail. Businesses need to be relevant to consumers and capitalise on any positive perceptions consumers have of online retail. They also need to introduce mechanisms that can change consumers' negative perceptions into positive perceptions.

A negative experience on a retail website can have lasting adverse consequences for the business. Therefore, businesses must understand the key constructs that affect consumers' perceptions of online retail. It is even more critical for businesses to understand what are the effects of the pandemic on consumer's perceptions in online retail. How has Covid-19 impacted the relationships between these constructs, and which of them are most important? Businesses that are changing their business models and delivery channels to service customers online must know which constructs are important and their potential impact. Existing online retailers that are not penetrating the market at levels they should must identify the constructs contributing to the sub-par performance. This will enable businesses to alter their business models to win customers and drive growth in online retail.

Therefore, the aim of this study is to determine the significance of key constructs on consumer perceptions in online retail in the current Covid-19 environment. Risk, trust, PU, and PEOU from the extended TAM model by Pavlou (2003) are essential constructs that need to be recognised in SA. In addition, PV and FC from the UTAUT2 model by Venkatesh et al. (2012) are included in the adapted model as key constructs. The inclusion of Covid-19 as a situational factor in the adapted model will help determine its significance and how it is shaping consumer

perceptions in online retail. The moderation impact of Covid-19 on the other constructs will also be analysed.

This study will provide businesses with insights into the significance of the constructs in consumer perception. It will allow businesses to focus both on positive and negative significant constructs, which will help design methodologies to adapt their online retail channels. Furthermore, it will shed light on the reality of the impact of Covid-19 on consumer perceptions of online retail in SA.

1.4 Research Question

The main research questions are:

1a. What is the significance of risk, trust, PU, PEOU, PV, FC, and Covid-19 on consumer PI in online retail in SA?

1b. What is the moderation impact of Covid-19 on risk, trust, PU, PEOU, PV, and FC on consumer online PI in SA?

The research questions will highlight the significant constructs that are associated with consumer online PI in a Covid-19 environment. It will provide businesses with insights into what to focus on and leverage to capitalise on the pandemic-induced opportunities. For example, in terms of the trust and risk constructs: If trust is higher and risk is lower in online retail, businesses must focus on expanding their offerings to consumers and moving more of their business online. However, if trust is lower and risk is higher because of financial or product loss during this period, then businesses must focus first on building trust and reducing risk to engage with customers more appropriately and build a customer base before expanding their offerings.

1.5 Significance of the study

This study will assist businesses in knowing if Covid-19 has changed consumer perceptions in online retail, and if so, what are the key factors that need to be focused on to grow their online retail.

The study is significant because it attempts to empirically measure the associations of not only the TAM and UTAUT constructs but also Covid-19 on consumer perceptions in online retail. In a dynamic environment, such as the current situation, this study aims to provide insights to help businesses become proactive and react appropriately by considering consumer perceptions and behaviour when shopping online. Obviously, the association of Covid-19 on consumer perception in online retail has not been studied earlier. The other constructs in the model have also not been measured in the current Covid-19-driven environment.

An intended consequence of this study is to indirectly improve SA's digital maturity through a bottom-up approach by focusing on online retail. The online retail market has the potential to enhance digital access, build infrastructure, promote innovation, increase adoption, create governance, and improve legal and regulatory frameworks, thereby accelerating digital transformation in SA. These alterations will contribute to reducing the digital divide and societal challenges of the country (Armstrong, 2020a).

In summary, the importance of knowing the significance of these constructs on consumer PI in online retail is not only beneficial to businesses but also contributes to improving SA's digital maturity.

1.6 Limitations of the study

This study focuses on online retail in a B2C environment and excludes the B2B and C2C environments. The constructs are tested in a South African context, limiting their application outside the country's settings.

1.7 Definition of terms

B2C Commerce: The process involves business-to-consumer transactions occurring in an online environment.

B2B Commerce: The process involves business-to-business transactions occurring in an online environment.

Digitisation: The process of converting analogue or physical assets into a digital form (Armstrong, 2020b).

Digitalisation: The process of transforming business processes, practices, and value models to harness digitised assets. Digitisation pertains to business, not technical outcomes (Armstrong, 2020b).

Digital Divide: The gap between individuals with or without access to forms of information or communication technology (Van Dijk, 2017; Van Dijk & Hacker, 2003).

Digital Maturity: A measure of a country's, industry's, or business's digital capability (technology and leadership) to deliver its digital strategy and transformation objectives at a point in time (Armstrong, 2020b). It is a snapshot of digital capability at a particular point in time.

Digital Transformation: It is the process of understanding a country's, industry's, and business's current digital maturity and creating a road map and plan to achieve the desired state of digital maturity through digitalisation (Armstrong, 2020b).

Electronic Commerce (e-commerce): Purchasing of goods, services, or any activity involving an online commercial transaction using internet technologies (Chaffey et al., 2019).

Facilitating Conditions (FC): Refers to consumers having the necessary access and devices to be able to shop online (Venkatesh, Morris, Davis, & Davis, 2003; Venkatesh et al., 2012).

Information Asymmetry: Refers to the lack of information pertaining to parties involved in a transaction (Devos, Van Landeghem, & Deschoolmeester, 2012; Huston & Spencer, 2002). The asymmetry causes uncertainty in the transaction, leading to risks that the parties must accept to complete the transaction (Devos et al., 2012; Huston & Spencer, 2002).

Mobile Commerce (m-commerce): This is an extension and evolution of e-commerce. It involves the purchasing of goods, services, or any activity involving

an online commercial transaction using internet technologies via a mobile device (Dhingra, Bhardwaj, & Aggarwal, 2015; Du & Li, 2019).

Mobile Devices: A portable device that enables individuals to complete their daily and lifestyle tasks anytime and anywhere.

Low Touch Economy: Refers to a world that is different from what society has experienced in the past; it is a world shaped by Covid-19 and has lasting impacts (sculpting interactions and behaviours of societies and individuals) (Mey & Ridder, 2020).

Perceived Ease of Use (PEOU): Refers to the perception of how easy it is to shop online, from visiting relevant websites to completing the transaction and receiving goods and services (Li, Zhao, & Pu, 2020).

Perceived Usefulness (PU): Refers to the utility value, such as convenience, product availability, low cost, and lack of physical interaction, that consumers benefit from when shopping online (Davis, 1989).

Price Value (PV): Refers to the trade-off between the perceived benefit of shopping online and the price of shopping online (Dodds, Monroe, & Grewal, 1991; Venkatesh et al., 2012).

Risk: The probability that an individual will suffer from any one or a combination of the following factors: performance, finance, time, psychological impact, social impact, and privacy loss or harm when conducting online activities (Featherman & Pavlou, 2003; Spiekermann & Paraschiv, 2002).

Trust: The extent to which engaging parties have confidence in each other (Mayer, Davis, & Schoorman, 1995). Ability, benevolence, and integrity are the primary factors of trust (Mayer et al., 1995).

Welfare Impact: The net gain a consumer receives after taking into account any costs (Brynjolfsson, Hu, & Smith, 2003; EconomicsOnline, 2020).

1.8 Assumptions

The terms e-commerce, m-commerce, online markets, and online retail are used interchangeably. When e-commerce is used, it also includes m-commerce and online retail, unless stated otherwise.

M-commerce is a commercial activity conducted using mobile devices through a wireless telecommunications network (Dhingra et al., 2015; Du & Li, 2019). E-commerce can be classified as the purchasing and selling of physical and digital products and services online or on the internet. M-commerce is, therefore, complementary to e-commerce and enabled by the use of mobile devices. Consequently, it can be seen as an extension and evolution of e-commerce.

In this study, the focus is on online retail in general.

CHAPTER 2. LITERATURE REVIEW

2.1 Introduction

The scope and structure of the literature review are described in this section. In Sections 2.2, existing consumer adoption models are reviewed, and an adapted model is derived and used as the basis of the study. In Section 2.3, the key constructs of the model are explained, and each hypothesis proposed. Section 2.4 provides a conclusion of the chapter, detailing the final adapted model and testing of all hypotheses.

2.2 Background

2.2.1 *Consumer Adoption Models*

Numerous models have been developed to understand the adoption behaviour and intention of individuals (Nedra, Hadhri, & Mezrani, 2019). Table 1 details a few of these models, their development over time, and the authors who developed them. Importantly, this is not an exhaustive list as listing all existing models is beyond the scope of this paper.

Table A List of Models that Predict Intention and Adoption Behaviour of Individuals

Model	Date Developed	Main Constructs	Source
Theory of Reasoned Action (TRA)	1980	Attitude Toward Behavior; Subjective Norm	(Fishbein & Ajzen, 1980)

Model	Date Developed	Main Constructs	Source
Technology Acceptance Model (TAM)	1989	Perceived Usefulness; Perceived Ease of Use; Subjective Norm	(Davis, 1989)
Theory of Planned Behavior (TPB)	1991	Attitude Toward Behavior; Subjective Norm; Perceived Behavioral Control	(Ajzen, 1991)
TAM 2	2000	Subjective Norm; Image; Job Relevance; Output Quality; Results Demonstrability; Experience; Voluntariness	(Venkatesh & Davis, 2000)
Extended TAM	2003	Perceived Usefulness; Perceived Ease of Use; Trust; Risk	(Pavlou, 2003)
Unified Theory of Acceptance and Use of Technology (UTAUT)	2003	Performance Expectancy; Effort Expectancy; Social Influence; Facilitating; Conditions; Gender; Age; Experience, Voluntariness of Use	(Venkatesh et al., 2003)
UTAUT 2	2012	Performance Expectancy; Effort Expectancy; Social Influence; Facilitating; Conditions; Hedonic Motivation; Price Value; Habit; Gender; Age; Experience,	(Venkatesh et al., 2012)

As can be seen in Table 1, several models aim at predicting an individual's adoptive behaviour. TAM, derived from the TRA model, is based on the notion

that the adoption of technology is not based solely on intrinsic motivations measured by TRA, such as attitude and subjective norm. As such, Davis (1989) added two external factors, PU and PEOU, into the model. Pavlou (2003) extended the TAM model to include the elements of trust and risk.

This extended TAM model by Pavlou (2003) is the most relevant model for understanding the impact of Covid-19 on consumer PI in the present environment. It includes extrinsic factors and intrinsic factors that contribute to a consumer's intention to purchase.

The UTAUT model, developed by Venkatesh et al. (2003), combines key constructs from eight other models to understand user acceptance. Venkatesh et al. (2012) developed the UTAUT2 model, which is an extension of the UTAUT model, to analyse intention in a consumer context. The model has been successful and efficient in predicting the behaviour and intention of consumers. Many studies have used the model to predict consumer behaviour and intention in different contexts. Therefore, two constructs, PV and FC from the UTAUT2 model, are also included in the model used in this study.

Covid-19 is a situational factor affecting the ability of consumers to perform certain activities. Therefore, it is also included in the adapted TAM model. Monsuwé, Dellaert, and De Ruyter (2004) describe situational factors as exogenous determinants and introduced them into the TAM model, where it evinced a significant impact on consumer online shopping experience.

Other adaptations of the TAM and UTAUT2 models such as that by Athapaththu and Kulathunga (2018), Cho and Sagynov (2015), Venkatesh and Davis (2000), Wu and Wang (2005), as well as the valence framework adaptation by Mou, Cohen, Dou, and Zhang (2019), a trust-based decision-making model by Kim, Ferrin, and Rao (2008), and a comprehensive model of risk by Glover and Benbasat (2010), were also considered for use in this study.

However, after evaluating these models and applying them to the current context of the pandemic, the extended TAM model by Pavlou (2003), as well as PV and FC from the UTAUT2 model, was more appropriate and relevant as the basis of this study.

The use of the TAM model to predict adoption behaviour has been a matter of contention (Chuttur, 2009). In a meta-analysis of TAM, Yousafzai, Foxall, and Pallister (2007) found that 47% of studies used self-reported data compared to less than 9% of studies using actual data. Many of the TAM studies have used students as the population sample, which impedes generalisation to the real-world setting (Chuttur, 2009). Another contention is that many studies have applied TAM to predict voluntary adoption rather than mandatory adoption, as is the case in the workplace (Chuttur, 2009). It is argued that PEOU has a stronger significance than PU in mandatory environments compared to voluntary ones (Yousafzai et al., 2007). Arguments also exist regarding TAM's ability to predict PI, although Hansen, Saridakis, and Benson (2018) cleared any uncertainties in their research on social media online retailing. In addition to PU and PEOU having a significant impact in predicting PI, they confirmed that risk and trust have a direct, marked effect on buying intent (Hansen et al., 2018).

The extended TAM model was thought to be relevant as it evaluates key constructs at a high level that affect consumer PI, while other models screened evaluate the antecedents of each construct, which provides key insight into the stimuli of each construct. However, in the current scenario, the constructs must be re-evaluated to understand if previous findings are still relevant and applicable. Covid-19, as a situational factor, has an important role in online consumer perceptions. This argument must be tested, and the results will provide both businesses with and without an online presence insights to quickly adapt and focus on key factors driving consumer PI. The 4IR world, together with the impact of Covid-19, is accelerating the digital economy. Therefore, businesses must be innovative and adopt a test-and-learn approach to fail fast and adapt to consumers and the situational environment. Thus, by focusing on the high-level constructs of risk, trust, PU, PEOU, PV, FC, and Covid-19, this study will indicate key determinants that can be easily and quickly tested by businesses to pivot their online models. Focusing on buyer needs will allow businesses to be relevant to consumers, capturing a sizable share of the online market.

Section 2.3 discusses the research question to be addressed and key constructs in the adapted model.

2.3 Research question

1a. What is the significance of risk, trust, PU, PEOU, PV, FC, and Covid-19 on consumer PI in online retail in SA?

1b. What is the moderation impact of Covid-19 on risk, trust, PU, PEOU, PV, FC on consumer online PI in SA?

This section aims to look at the significance of seven constructs, risk, trust, PU, PEOU, PV, FC and Covid-19, on consumer online PI based on the existing literature.

The moderating impact of Covid-19 on other constructs in the model will also be analysed.

2.3.1 *Risk*

Certain risks are inherent in online retail businesses (Featherman & Pavlou, 2003; Spiekermann & Paraschiv, 2002). Uncertainty for a buyer in an online or e-commerce market reduces the willingness to pay market prices (Huston & Spencer, 2002). The uncertainty generates perceived risks inherent in an online transaction during the purchase decision. The perceived risk factors affecting online purchases are performance, financial, time, self-esteem, social status, and privacy (Featherman & Pavlou, 2003). In addition, Spiekermann and Paraschiv (2002) introduce delivery risk into the equation because of uncertainties in the delivery process. The risk factors are described in Table 2.

Table B Risk Factors

Risk Factors	Description	Source
Performance	The potential that the product does not function as expected.	Featherman & Pavlou, 2003

Risk Factors	Description	Source
Financial	The potential monetary loss stemming from both initial purchase and other subsequent costs.	Featherman & Pavlou, 2003
Time	The potential opportunity cost of time taken to search for products online and following up on other pre and post-sales queries.	Featherman & Pavlou, 2003
Psychological	The potential loss of self-esteem through any stage of the purchasing journey.	Featherman & Pavlou, 2003
Social	The potential for a negative social status perception for purchasing a specific product or service.	Featherman & Pavlou, 2003
Privacy	The potential loss of personal information.	Featherman & Pavlou, 2003
Delivery	The potential loss from the product not being delivered or incorrect delivery.	Spiekermann & Paraschiv, 2002

Risks in e-commerce transactions limit the market's potential to reach optimal growth. Consumer trust in e-commerce can help overcome the aforementioned risks and enhance e-commerce activity. Exacerbated information asymmetry in an online market can deter online businesses from reaching their full potential. According to Devos et al. (2012), information asymmetry is composed of trust, adverse selection, and moral hazard. Trust is the extent to which the engaging

parties have confidence in each other (Devos et al., 2012). Adverse selection is selecting the wrong seller or an inferior-quality product because of hidden information (Devos et al., 2012). Moral hazard, in turn, is if the party with superior information changes their behaviour to commit fraud or disadvantage the other party, usually during the post-contractual stage (Devos et al., 2012).

According to Mou, Shin, and Cohen (2017), trust and risk are critical factors in understanding consumer PI in online retailing. This is evidenced in their research which utilised a meta-analysis approach to study 67 papers that explored the relationship between trust and risk on consumer PI (Mou et al., 2017). Their findings confirmed the importance of both trust and risk as significant factors in consumer perceptions of e-commerce (Mou et al., 2017).

Previous studies have highlighted that perceived risk negatively affects consumer PI (Dinev et al., 2006; Featherman & Pavlou, 2003; Garbarino & Strahilevitz, 2004; Glover & Benbasat, 2010; Hong, 2015; Kim et al., 2008; Liao, Liu, & Chen, 2011; Mou et al., 2017; Pavlou, 2003; Shukla, 2014; Sondhi, 2017).

In a South African context, Steyn and Mawela (2016) concluded that mitigating the risk factors is important for consumers to continue shopping online.

In the current environment in SA, risk is a necessary construct that must be tested to understand its effect on consumer PI in online retail. Therefore, the following hypothesis is proposed:

H1: Risk is negatively associated with consumer PI.

2.3.2 *Trust*

Trust is made up of three primary characteristics: ability, benevolence, and integrity (Mayer et al., 1995). In this context, ability refers to the capability of a retailer to provide a rich online shopping experience and delivering the product or service without any hassles (Mayer et al., 1995). Benevolence refers to the trustee acting in good faith and wanting to provide an excellent experience to the trustor (Mayer et al., 1995). Integrity refers to a set of principles or values that the trustor expects the trustee to embody (Mayer et al., 1995). Online trust is

composed of two constructs, general and specific trust, each having two dimensions (Thatcher, Carter, Li, & Rong, 2013) (Figure 2). Technology infrastructure and institutional mechanisms are the two dimensions of general trust, whereas the merchant and website are the dimensions of specific trust (Thatcher et al., 2013). Trust in the merchant and website are the most essential factors for online purchases. Infrastructure and institutional trust mechanisms need to be in place to enable consumers to engage in e-commerce activity online. Therefore, in SA, the government, industry, and regulatory institutions must focus on general trust constructs to create an environment for e-commerce and m-commerce activity to flourish. In this study, specific trust has been considered.

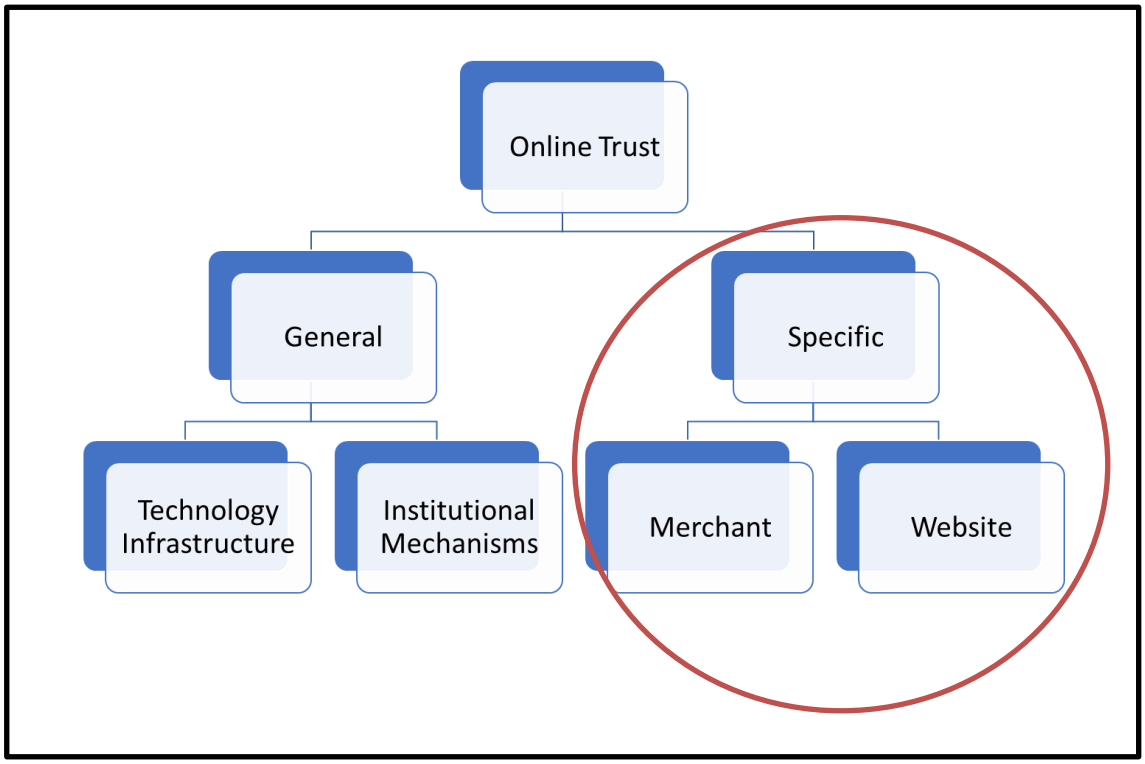


Figure 2 Online Trust Framework; source: (Thatcher et al., 2013)

Many studies have highlighted that perceived risk negatively affects a consumer's PI, whereas trust, both directly and indirectly, positively affects buying intent. In addition, trust has a negative effect on risk (Dinev et al., 2006; Featherman & Pavlou, 2003; Garbarino & Strahilevitz, 2004; Glover & Benbasat, 2010; Hong, 2015; Kim et al., 2008; Liao et al., 2011; Mou et al., 2017; Pavlou, 2003; Shukla, 2014; Sondhi, 2017).

In SA, a study on consumer online retail PI conducted by Steyn and Mawela (2016) found trust to be a significant factor for consumers to complete transactions online.

The breadth and depth of research on both trust and risk have been widely studied. These factors continue to be relevant in determining consumer PI. Therefore, based on the previous research, the following hypotheses are proposed:

H2: Trust is positively associated with consumer PI.

H3: Trust is negatively associated with consumer perceived risk.

2.3.3 *Perceived Usefulness*

PU refers to consumer perception of the value of utility derived from using technology. Davis (1989) defines PU as “PU is the extent to which a person believes that using a particular technology will enhance his or her job performance“ (p.320). In this context, PU is the utility value, such as convenience, product availability, low cost, and bypassing of physical interaction, that consumers benefit from when shopping online.

Davis (1989) asserts that PU and PEOU are essential constructs of the TAM to predict an individual’s behavioural intention. Appreciably, the researcher Davis (1989) found that the model was not only a significant predictor of current usage but of future usage as well. The key findings of that research are relevant and critical even to this day. Many studies conducted using the original TAM model validated the importance of PU and PEOU in consumer PI (Athapaththu & Kulathunga, 2018; Faqih, 2011; Gefen, Karahanna, & Straub, 2003; Gefen & Straub, 2000; Pavlou, 2003; Roca, García, & De La Vega, 2009). In a South African context, PU is critical because convenience is an important predictor of PI (Steyn & Mawela, 2016).

In the low touch economy, PU is an essential factor because consumers seek convenience and low physical interaction. Therefore, it is critical to understand how consumer perceptions of PU are shaped and how significant this factor is in

the current environment. Should businesses that are changing business models, delivery channels, and enhancing existing online channels focus on PU first before other factors? Therefore, the following hypothesis is proposed:

Hypothesis 4: PU is positively associated with consumer PI.

High consumer trust in online retail demonstrates enhanced PU (Pavlou, 2003). If consumers do not trust online retail, they will not derive any utility value from it. This is because the lack of trust will deter them from shopping online. Therefore, the following hypothesis is proposed:

Hypothesis 5: Trust is positively associated with consumer PU.

2.3.4 *Perceived Ease of Use*

PEOU refers to consumers' perception of how easy it is to use a particular technology. Li et al. (2020) define it as "ease of use can also be viewed as consumer perception of a product, specifically, whether the product is easy to learn and use and reduces the burden of memory and degree of satisfaction" (p.1). In online retail, it is the process of learning how to shop online, from visiting relevant websites to completing the transaction and receiving goods and services. The level of difficulty, as perceived by consumers, of completing all of these steps in online retail will influence their PEOU, an essential factor in predicting PI. Taufik and Hanafiah (2019) concluded that PEOU significantly affects consumer intention to adopt self-service technology. Their study applied the TAM to understand the adoption of self-service technology at airports. Nedra et al. (2019) conducted a comprehensive study of consumer intention to use a fashion retailer's social media account. They performed a quantitative study, followed by a qualitative study, to validate the quantitative results (Nedra et al., 2019). They concluded that PEOU significantly impacts consumer intention to use social media accounts. Another study investigated PEOU in the use of mobile applications in e-commerce (Li et al., 2020). The authors confirmed that PEOU is a critical factor to be considered while designing mobile applications (Li et al., 2020). Other studies have also supported the use of PEOU in predicting

consumer PI (Guritno & Siringoringo, 2013; Hansen et al., 2018; Mwiya et al., 2017; Pavlou, 2003).

In a Covid-19 environment, the role of PEOU in online retail must be understood for businesses to react appropriately to consumer perceptions. Therefore, the following hypothesis is proposed:

H6: PEOU is positively associated with consumer PI.

When consumer trust is high, their PEOU is also high. This is because a consumer need not critically assess an online retailer's website before making a purchase (Pavlou, 2003). Therefore, the following hypothesis is proposed:

H7: Trust is positively associated with consumer PEOU.

When consumer PEOU is high in online retail, it positively affects their PU because it provides them with convenience (Ozturk, Nusair, Okumus, & Hua, 2016; Pavlou, 2003). Therefore, the following hypothesis is proposed:

H8: PEOU is positively associated with consumer PU.

2.3.5 *Price Value*

There are costs associated when a consumer shops online, such as data, convenience, delivery, and transaction expenses. Dodds et al. (1991) describe PV as the "amount of sacrifice needed to purchase a product" (p.308). In this context, PV refers to the trade-off between the perceived benefit of shopping online and the cost of online shopping. Therefore, the PV is positive when the perceived benefits of shopping online are higher than the cost (Venkatesh et al., 2012).

Venkatesh et al. (2012) included PV as a significant construct in the UTAUT2 model to predict consumer adoption of technology (Venkatesh et al., 2012). Kim, Chan, and Gupta (2007) conducted a study to understand the impact of the price of mobile internet to drive m-commerce. Price had a significant impact on consumers' use of the mobile internet to conduct m-commerce. It was more significant than PU and promoted hedonic behaviour to use the mobile internet.

PV is an important construct in consumer intention to purchase online, specifically in the economic setting of SA. Consumers may choose not to shop online, even in a Covid-19 environment, if they perceive higher prices or lower PV than the physical market. Therefore, the following hypothesis is proposed:

H9: PV is positively associated with consumer PI.

2.3.6 *Facilitating Conditions*

FC refers to consumers having the necessary access and devices to shop online (Venkatesh et al., 2003; Venkatesh et al., 2012). In a South African context, the digital and economic divide prejudices a large portion of the population from shopping online (Armstrong, 2020a).

Venkatesh et al. (2003) developed the UTAUT model to predict technology acceptance in an organisational context. They discovered that FC was a significant predictor of individuals' adoption of technology. Venkatesh et al. (2012) further confirmed the significance of FC in the UTAUT2 model as not only a significant predictor of usage but also intention in a consumer context. Therefore, the following hypothesis is proposed:

H10: FC is positively associated with consumer PI.

2.3.7 *Situational Factors – Covid-19*

The impact of Covid-19 on businesses is still unclear, posing a challenge to predict the future of businesses. The Board of Innovation has compiled a report attempting to provide businesses with a view of what the potential of the low touch economy may look like (Mey & Ridder, 2020). The report states that people and organisations will adapt to new ways of living, challenging traditional behavioural norms (Mey & Ridder, 2020).

Bhargava et al. (2020) indicate a considerable increase in digital activities during the period. They also expect a decrease in physical shopping at stores and malls (Bhargava et al., 2020). Covid-19 has also affected consumers' disposable income due to job losses, salary cuts, and increases below inflation (Bhargava et

al., 2020). Numerous web articles, to a great degree, have similar views and are aligned on the predictions of consumer behaviour in the future. Obviously, they remain to be empirically tested.

Consumer spending is expected to change drastically, shifting from non-essential to essential items (Jones, 2020). However, as countries move along the Covid-19 curve, consumers are optimistic about economic recovery (Jones, 2020). According to Figure 2, countries such as Indonesia, China, Nigeria and India appear to be more optimistic than other countries (Bhargava et al., 2020; Jones, 2020). SA is also more optimistic than other countries, mainly Europe. Consumers are spending more on household goods, food, groceries, and entertainment through online portals (Jones, 2020).

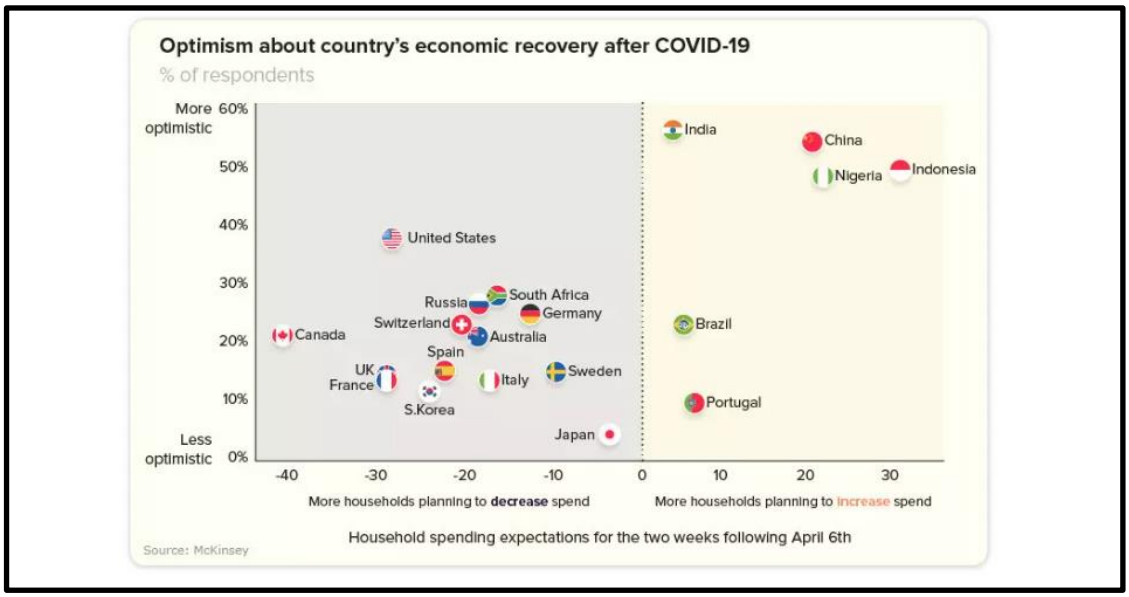


Figure 3 Optimism about a Country's Economic Recovery after Covid-19 (Bhargava et al., 2020; Jones, 2020)

The environment that consumers are in, referred to as situational factors, plays a significant role in their purchase behaviours (Bandura, 1977; Hand, Riley, Harris, Singh, & Rettie, 2009). The situational factors, which influence and shape consumer behaviours, cannot be controlled or influenced in any way by consumers themselves (Engel & Blackwell, 1982; Haugtvedt, Petty, & Cacioppo, 1992; Monsuwé et al., 2004). Therefore, Covid-19 can be classified as a situational factor as it is shaping businesses, societies, and the lives and behaviour of individuals.

The Covid-19 environment has forced customers to find alternative channels to purchase goods and services. Online purchasing provides a safer environment and limits the risk of contracting the infection compared to physical channels. Therefore, the following hypothesis is proposed:

H11: Covid-19 is positively associated with consumer PI.

Monsuwé et al. (2004) developed a conceptual framework by adapting the TAM model to include exogenous factors, such as situational factors. The conceptual framework that Monsuwé et al. (2004) developed models situational factors as having a moderating effect on consumers' PI.

Dabholkar and Bagozzi (2002) concur with other researchers, such as (Ajzen, Timko, & White, 1982; Baron & Kenny, 1986), that although it is essential to measure the direct effect of external factors on PI, it is obvious. They, therefore, proposed analysing the moderating effect of external factors, such as situational factors. They demonstrated that situational factors attenuate the constructs that affect an individual's intention in adoption models.

Covid-19 is a situational factor that will indirectly affect a consumer's PI by attenuating the association of other constructs with PI. If consumers are forced to shop online because of Covid-19, then their trust, PU, PEOU, PV, and FC are positively moderated.

Therefore, the fear of contracting Covid-19 can drive consumers with high trust in online retail to skip physical retail. Thus, Covid-19 strengthens the association between trust and consumer PI. This moderating effect is similar for PU, PEOU, PV, and FC. Fear of Covid-19 and restrictions on physical shopping will drive consumers with high PU, PEOU, PV, and FC to shop online because of the positive association they have with online retail.

Therefore, the following hypothesis is proposed:

H12: Perceptions of the Covid-19 impact act as a moderator such that the relationship between trust and PI is stronger when the effect of the situational factor is higher

H13: Perceptions of the Covid-19 impact act as a moderator such that the relationship between PU and PI is stronger when the effect of the situational factor is higher

H14: Perceptions of the Covid-19 impact act as a moderator such that the relationship between PEOU and PI is stronger when the effect of the situational factor is higher

H15: Perceptions of the Covid-19 impact act as a moderator such that the relationship between price value and PI is stronger when the effect of the situational factor is higher

H16: Perceptions of the Covid-19 impact act as a moderator such that the relationship between facilitating conditions and PI is stronger when the effect of the situational factor is higher

Covid-19 will have the opposite effect on the risk because consumers who perceive a high risk of online shopping may be forced to buy online irrespective of their risk perception because of the current circumstances. Therefore, the following hypothesis is proposed:

H17: Perceptions of the COVID-19 impact act as a moderator such that the relationship between risk and PI is weaker when the effect of the situational factor is higher

2.3.8 *PI*

For online retailing to accelerate, factors driving consumer PI must be determined. PI is considered a strong indicator of actual behaviour. Lim, Osman, Salahuddin, Romle, and Abdullah (2016) confirmed in their research that PI is a strong predictor of actual behaviour. Pavlou and Fygenson (2006) also found that PI was significant in predicting purchase behaviour in a B2C online environment. Venkatesh et al. (2003) synthesised and integrated eight technology adoption models to generate the UTAUT model. Their research identified the key factors that lead to user adoption of technology. Some of the models that they compared were the TRA, TAM and TPB. The findings were in line with Ajzen (1991) that

behaviour intention is a strong predictor of actual behavior. The factor of PI has been applied widely to study user adoption and predict actual behavior. Therefore, this research will use PI as an indicator of actual behavior.

2.4 Conclusion of the Literature Review

An understanding of the significance of key constructs on consumer perceptions in online retail is critical for businesses to develop online business models that are appropriate and relevant. Based on the previous literature on consumer adoption models, constructs from the extended TAM and UTAUT2 were identified as most appropriate. Therefore, the extended TAM model by Pavlou (2003) and the UTAUT2 model by Venkatesh et al. (2012) will be used as the basis of this research because they include both intrinsic and extrinsic factors that affect consumer perceptions in online retail. The effect of key constructs, such as risk, trust, PU, PEOU, PV, and FC, on consumer PI will be tested. The situational factor of Covid-19 will be introduced into the adapted model, and its association with consumer PI will be measured.

In addition, Covid-19 as a moderator on other constructs in the model will also be tested to ensure a detailed understanding of its association with consumer PI. Figure 4 depicts the adapted model, and Appendix A provides a summary of the hypotheses. In Figure 4, solid lines represent a direct impact on PI and other constructs, and the dotted lines represent the moderation effect of Covid-19 on other constructs in the model.

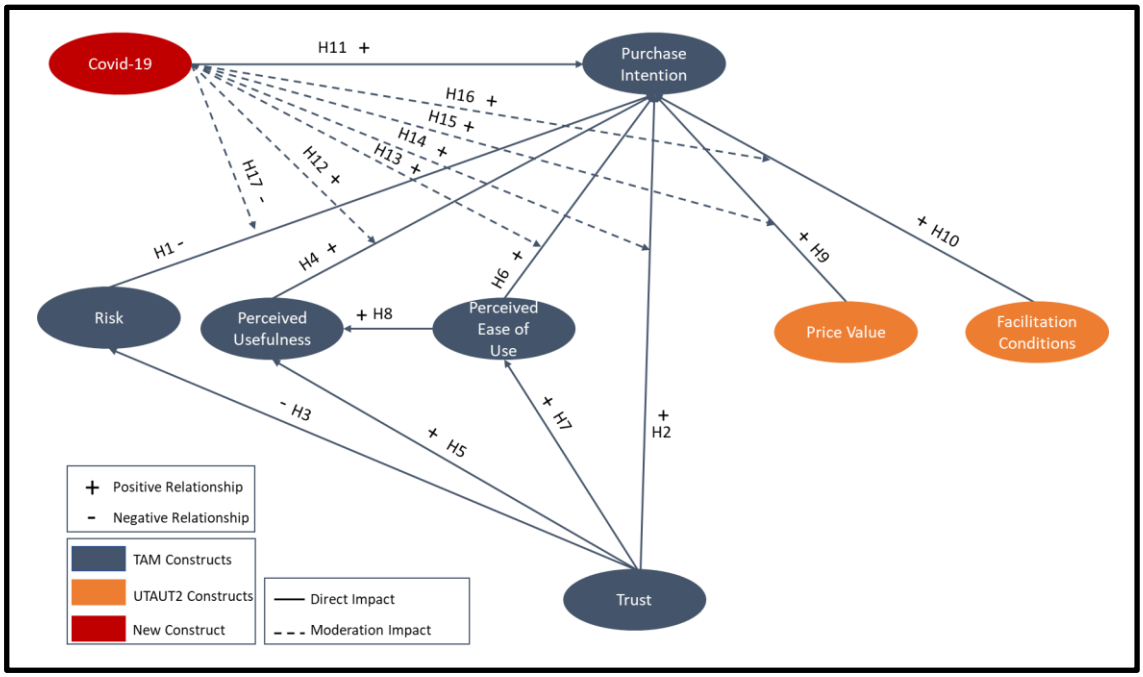


Figure 4 Adapted Model for This Study (Pavlou, 2003; Venkatesh et al., 2012)

CHAPTER 3. RESEARCH METHODOLOGY

3.1 Research approach and design

The research employs quantitative statistical modelling. Quantitative analysis tests specific relationships and hypotheses that lend themselves to statistical testing and is therefore appropriate for the model used in this study (Creswell & Creswell, 2017).

3.2 Data collection methods

Data was collected through electronic surveys to obtain closed-form question responses, as is described in Section 3.4. Closed-form surveys provide regulated data formats that facilitate statistical construct formation and is the most appropriate method for the statistical modelling employed in this research (Creswell & Creswell, 2017). Moreover, electronic surveys are appropriate for the Covid-19 situation as they allow for social distancing and response flexibility.

3.3 Population and sample

3.3.1 *Population*

The study population involved South African adult (18 years and older) consumers capable of performing online shopping due to appropriate digital access. Further discussion on generalisability can be found in the external validity section. A snowball and convenience sampling technique was used to reach the appropriate number of responses required. The target population were the researcher's professional, social media, and university contacts who met the inclusion criteria.

3.3.2 *Sample and sampling method*

Table 3 details the demographic distribution of the surveyed sample and other key variables used in the research.

Table C Demographic and Other Variables of the Sample Population

Demographics & Other Variables	Category	N(n=376)	% Contribution
Gender	Male	139	37%
	Female	237	63%
Age	20 to 24	97	26%
	25 to 29	85	23%
	30 to 34	70	19%
	35 to 39	54	14%
	36 to 39	57	15%
	50 to 64	12	3%
	>65	1	0%
Education	Completed high school	36	10%
	Diploma	6	2%
	Bachelors degree	93	25%
	Honours/Post Graduate	132	35%
	Masters	97	26%
	PHD	12	3%
Household Income	0 to R4,999	24	6%
	R5,000 to R9,999	23	6%
	R10,000 to R19,999	31	8%
	R20,000 to R39,999	74	20%
	R40,000 to R69,999	84	22%
	R70,000 to R99,999	32	8%
	>R99,999	59	16%
	Prefer not to say	48	13%
Online Shopping Experience	No experience	21	5%
	Limited experience	47	13%
	Moderate experience	126	33%
	Above average experience	82	22%
	Extensive experience	101	27%

Initially, 376 adult consumers accessing e-commerce were sampled using the convenience method. In this method, the researcher contacted consumers with experience in online shopping through professional social media platforms, professional contacts, and university students and staff to request survey responses. A snowball method of sampling was also employed. In this method, each person contacted was asked to pass the survey to others that they believed met the inclusion criteria. This sampling method most likely provides a large enough sample for the chosen statistical modelling. The structural equation modelling works optimally with a sample size of 200 or more individuals. The snowball sample method is likely to provide a heterogenous sample that more closely reflects the side diversity of the population than would a sample drawn, for instance, from one organisation. The sampling has certain limitations, discussed in a subsequent section.

A total of 368 viable responses after removing eight responses with excessive missing data were obtained from the final sample.

3.4 The research instruments

This section describes the research instrument, followed by an analysis of the factor structure.

3.4.1 *The Content of the Research Instrument*

The research instrument is a survey disseminated electronically through the Qualtrics survey platform. Responses for all the questions employ a seven-point Likert scale, from strongly agree to strongly disagree unless otherwise indicated. The scores were as follows: 1, strongly disagree; 2, disagree; 3, somewhat disagree; 4, neither agree or disagree; 5, somewhat agree; 6, agree; 7, strongly agree. A seven-point Likert scale allows individuals to clearly distinguish their perceptions and make more fine-grained distinctions (Hartley, 2014; Joshi, Kale, Chandel, & Pal, 2015; Pasek & Krosnick, 2010). Moreover, Givon and Shapira (1984) found that 7-point scales are more reliable than 2-, 3-, or 5-point scales.

A complete list of questions is provided in Appendix B, and internal reliabilities are discussed in the next sub-section. The following constructs are contained in the survey

Risk. The survey uses three questions developed by Kim et al. (2008), on risk related to online shopping. “Purchasing online would involve more product risk (e.g., not working, defective product) when compared with more traditional ways of shopping” is a sample question.

Trust. Seven items related to trust in online shopping channels, developed by Glover and Benbasat (2010), were used. “Promises made by online retailers are likely to be reliable” is a sample item.

Perceived Usefulness. Four questions on PU in online shopping, developed by Glover and Benbasat (2010), were used. “Buying online improves my ability to make good purchase decisions” is a sample item.

Perceived Ease of Use. The survey included PEOU questions developed by Glover and Benbasat (2010). “Buying online is clear and understandable” is a sample question.

Price Value. Three items, specified by Venkatesh et al. (2012), were used. “Online retailers offer value for money” is a sample item.

Facilitating Conditions. Three questions on FC of online retail, developed by Venkatesh et al. (2012), were used. A sample item is “I have the resources necessary to shop online.”

Covid-19 Impact. Covid-19-specific scales remain to be developed. However, other health- and disease-related scales exist, none of which is relevant to this research. Therefore, the author has composed a four-item scale to test the perceived impact of Covid-19 on online shopping. A sample item is “Covid-19 has changed my perception of online retail positively.”

PI. Items from Glover and Benbasat (2010) for intention to purchase online were also used. Two approaches were used. First, a 7-item Likert scale was used, with a sample item being “I intend to buy online.” Next, a second item refers to the timeframe of intent to purchase online, with ordinal options including “within 1 month,” “1-3 months,” “3-6 months,” “6-12 months,” and “not within 12 months.”

Control variables. Demographic variables, such as age, gender, education, and household income (measured in ordinal bands), were included as controls. In addition, a single global question tests the extent to which the consumer has prior experience with online shopping. The question is rated on a 1-5 scale, with 1 indicating no prior experience and 5 indicating extensive prior experience.

3.4.2 *Factor Structure of the Research Instrument*

Various tests and procedures are applied to the data to test and establish factor reliability and validity.

Most of the constructs are reflective, indicating a high correlation among the items. These items will be analysed using traditional approaches. However, the

“FC” construct, in particular, is deemed to be a formative rather than a reflective factor, as was described by Jarvis, MacKenzie, and Podsakoff (2003). This is because they capture disparate FC for which correlation may not be guaranteed. By contrast, any individual could experience a strong FC in one area but a weak FC in another. Accordingly, the FC construct is measured as a sum of items and excluded from the internal reliability and factor analyses.

First, internal reliability for each reflective factor is tested using the Cronbach alpha measure, as can be seen in Table 4.

Table D Internal Reliability Scores for Factors

Factor	Cronbach Alpha
Trust	0.82
PU	0.79
PEOU	0.83
PV	0.77
Covid-19	0.74
PI	0.89
Risk	0.56 for the three variables. Two of the variables are Likert scaled and correlated (r) = 0.43. The third is scaled differently (see Appendix 3 and explanation below) and is poorly correlated with the other two. For the final risk variable, the research tests the Likert pair averaged and the stand-alone variable separately. See subsequent text for more details.

As can be seen in Table 4, all factors have an acceptable alpha value based on the commonly accepted cut-off of 0.70 per Lee (2015), with the exception of risk (α = 0.56). Risk was originally tested using three variables: one pair of moderately correlated variables and a third variable having a low correlation with the other two variables. The third variable is, “How would you rate your overall perception of risk from online retail sites?” Therefore, this variable was excluded from the results. The risk construct is thus reduced, therefore, to two variables, which cannot be analysed using Cronbach alpha.

Next, a confirmatory factor analysis (CFA) is applied to the remaining reflective variables for establishing simultaneous validity of the proposed factor structure. The CFA has acceptable fit, with following values: chi-square, 215.32; SRMSR, 0.048; RMSEA, 0.044 (90% CI: 0.035-0.054); CFI, 0.97, and NNFI, 0.96, indicating a good overall factor structure. Individual items have acceptable factor loadings, and the factors are not overly highly correlated. Therefore, this factor structure is used in the results section.

3.5 Procedure for data collection

The sample was entered into a Qualtrics panel and sent as a link via an email invitation. Moreover, Qualtrics was programmed to send reminder emails to non-respondents. Once sufficient data were collected, the survey was closed.

3.6 Data analysis and interpretation

Data were predominantly continuous constructs, with inter-relationships among variables being the research interest. Therefore, correlational methods are used as the underlying approach.

During the method step, because the study involves pre-designed multi-item constructs, internal construct reliability will be tested using Cronbach alpha, with a value of 0.7, indicating an acceptable threshold (Lee, 2015). CFA was used to test for construct validity and for explaining the variance.

The results will begin with bivariate Pearson correlations to test for simple linear associations between the constructs, including demographics, which will be analysed as dummy variables if they are categorical. Structural equation modelling will form the major analysis methodology to test the main model (Hair, Hult, Ringle, Sarstedt, & Thiele, 2017).

Finally, moderation analysis will be performed using the interaction variable method, wherein the central independent variable will be multiplied with the centred moderator, and these interaction variables will be included in the model. Relationships affected by significant and substantial interaction variables will be graphed.

3.7 Limitations of the study

This study has several limitations, some of which are discussed below.

The study has a closed-form and quantitative design. There are several subtle and even unknown factors in the unfolding impact of Covid-19 on businesses and consumers, all of which cannot be analysed in this study. As such, supplementary qualitative research may be used to examine these broader issues.

The study is conducted on a single sample, limited to the researcher's contacts. Broader and more stratified sampling directly reflecting the real world can be used in future studies.

The study has a cross-sectional design, which hinders analysing changes over a period of time. Future studies are warranted to have a longitudinal design to test for changes over time.

3.8 Validity and reliability

The following reliability and validity issues are relevant to the study.

3.8.1 *Reliability*

As discussed earlier, the internal reliability of the constructs is directly assessed through Cronbach alpha and factor analyses. An alpha value of 0.7 is the acceptable threshold for reliability (Lee, 2015). Moreover, test-retest reliability or inter-rater reliability cannot be tested with the current methodology as it is not a longitudinal or multi-rater study.

3.8.2 *External validity*

As discussed in the sample section, the generalisability of this study is strengthened by involving heterogenous respondents. However, generalisability is limited due to the South African study population and the researcher's contacts.

Initially, the population was described as South African consumers capable of using e-commerce platforms. However, the results can be extrapolated to other contexts worldwide because digitally connected consumers often share similar schema (e.g., e-commerce is strongly dominated or at least influenced by multinational technology companies).

3.8.3 *Internal Validity*

Several aspects of internal validity have been analysed in this study. The closed-form questions are selected for their content validity and prior use in similar studies. Construct validity is tested directly in this study using CFA. The structural equation model is able to test predictive validity against a known model and theory set, therefore testing directly for model validity.

3.9 Ethical considerations

The relevant institution's ethics forms and declarations have been agreed to and signed. The ethics protocol number is WBS/BA0203337k/737. This research does not violate any ethical processes of the institution. In addition, all research will be conducted with the highest standards of integrity, honesty, and ethics. There will be no manipulation of data, and all data collected will be used only for

intended purposes. Respondents are anonymised, and there are no mechanisms in place to track responses back to individual respondents.

CHAPTER 4. PRESENTATION OF RESULTS

4.1 Introduction

This chapter discusses the results of the empirical analyses. The first analytical approach involves simple bivariate Pearson correlations, which are used to investigate initial simple associations between constructs. Thereafter, structural equation path modelling is used to estimate the main model, as seen in Figure 5. Finally, the moderation portions in Figure 4 are estimated by analysis of interaction effects as discussed below.

4.2 Correlational Analysis

The first analyses presented utilise Pearson correlations to investigate bivariate correlations between construct pairs. Table 5 below shows the correlation coefficients as well as basic descriptive statistics, noting that these analyses are based on construct factor scores from the CFA reported in the methodology section. Descriptive statistics are also included in the analyses. In addition, the control variables were also included in the correlation matrix to identify any significant impacts that they may have on PI or any of the other constructs.

As seen in Table 5, online PI is highly correlated with PU ($r = .73$, $p < .01$), PEOU ($r = .73$, $p < .01$), COVID-19 ($r = .63$, $p < .01$), trust ($r = .61$, $p < .01$), and PV ($r = .57$, $p < .01$), and moderately correlated with FC ($r = .49$, $p < .01$) and prior experience ($r = .52$, $p < .01$).

As also expected by the model, trust is positively correlated with PU ($r = .70$, $p < .01$) and PEOU ($r = .72$, $p < .01$), although surprisingly trust and risk are also positively correlated ($r = .38$, $p < .01$) which is contrary to H3.

A final path in the model involves an expected association between PU and PEOU, which is strongly supported with $r = .83$, $p < .01$,

As can be seen in Table 5, the demographic effects are largely non-significant in correlations with main variables, aside from prior experience.

Table E Correlations and basic descriptive statistics

	M	SD	1 .	2 .	3 .	4 .	5.	6 .	7 .	8 .	9 .	10	11	12
1. PI	.00	.95	1.00											
2. PU	.00	.92	.73***	1.00										
3. Risk	.40	1.54	.35***	.30***	1.00									
4. PEOU	.00	.93	.73***	.83***	.35***	1.00								
5. PV	.00	.90	.57***	.82***	.31***	.69***	1.00							
6. FC	4.21	2.78	.49***	.57***	.27***	.63***	.47***	1.00						
7. Trust	.00	.91	.61***	.70***	.38***	.72***	.64***	.50***	1.00					
8. COVID-19	.00	.89	.63***	.54***	.20***	.42***	.38***	.29***	.37***	1.00				
9. Female	.37	.48	.06	.07	.07	.08	.07	.04	.07	-.05	1.00			
10. Age	3.98	1.06	.05	.05	.04	.02	.08	.02	.10*	.02	.13**	1.00		
11. Education	5.77	1.23	.03	.00	.00	.01	.08	-.01	.03	-.05	.07	.45***	1.00	
12. Income	5.51	1.74	.27***	.27***	.08	.25***	.29***	.30***	.26***	.23***	-.03	.35***	.15***	1.00
13. Experience	3.56	1.14	.52***	.49***	.31***	.53***	.38***	.42***	.41***	.23***	.05	.11**	.12**	.34***

*Notes: M = Variable mean, SD = standard deviation, *** = p < .01, ** = p < .05, * = p < .10*

Bivariate correlations cannot, however, model the complexities of the main model, which involve many simultaneous mediation pathways and which controls for the simultaneous effect of all variables. Structural equation path modelling is, therefore, used to attempt a simultaneous estimation of this model, as discussed next.

4.3 Main Structural Equation Model

The main structural equation model (SEM), as seen in Figure 5, is tested using maximum likelihood covariance-based modelling, using SAS PROC CALIS. The measurement model (CFA portion) is modelled together with structural regression estimations between constructs, and full-information maximum estimation is used to account for missing data.

The initial model that was hypothesised in Figure 4 does not have acceptable fit. It should be noted that there are many interdependencies between the constructs, and certain paths may have been overlooked in the initial model. The unique environment in which Covid-19 is having a major impact on consumers plays a vital role in the relationships between constructs. Therefore, based on the data collected, it was analysed using the Lagrange multipliers technique to identify significant paths between constructs. Analyses of Lagrange multipliers suggest the addition of two additional structural paths that, on reflection, align with sensible theory:

- *A path from FC to PEOU*: This is discussed in more detail in the discussion chapter 5.
- *A path from PV to PU*: This is also discussed in more detail in the discussion chapter 5.

Based on this finding, the initial model in Figure 4 was amended to include the two new paths. In addition, as depicted in the Pearson correlation analysis, the only control variable that had a significant impact on PI was prior experience. Therefore, this was also included in the amended model, which can be seen in

Figure 5. The addition of these new paths is aligned to theory and is discussed in chapter 5.

The amended model depicted in Figure 5 has good fit, with Chi-square = 364.76 df = 168, Ch-square / df = 2.17, SRMSR = .058, RMSEA = .054 (90% CI = .046-.061), CFI = .95, NNFI = .94. Therefore, this model is adopted, with Figure 5 below showing the path parameters.

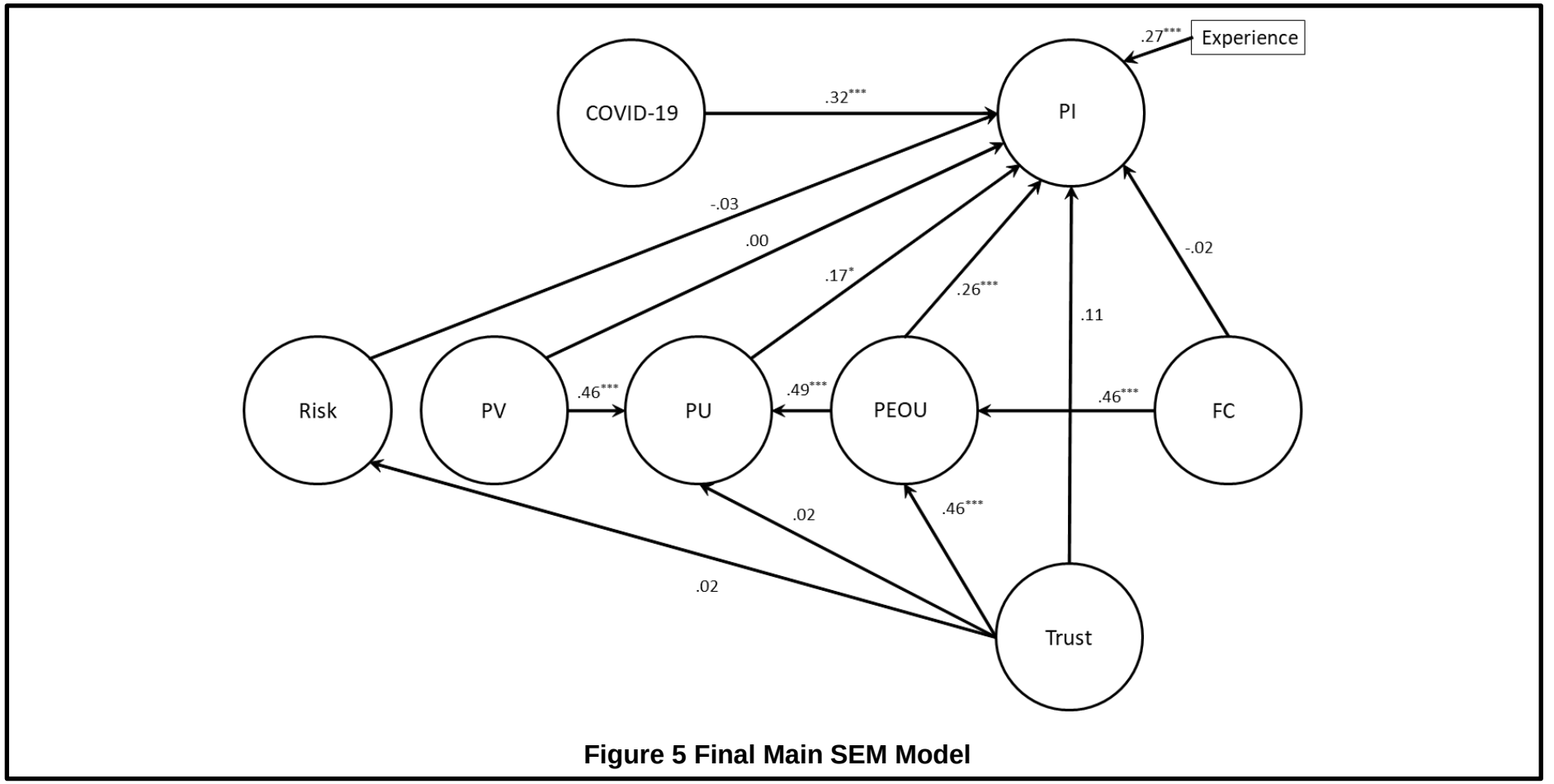


Figure 5 Final Main SEM Model

*Notes: All paths modelled are standardised. *** = p < .01, ** = p < .05, * = p< .10.*

As can be seen in Figure 5, COVID-19 has a moderate association with PI (β = .32, p < . 01). As expected in the model, PEOU is positively although moderately associated with intent to purchase (β = .26, p < .01), as is past experience (β = .27, p < .01). Other predictors of intent to purchase have small or non-significant effects, with only a small effect from PU (β = .17, p < .10) showing little effect.

Trust was hypothesised to affect some of the mediator variables. However, in these results, it only has a substantive association with PEOU (β = .46, p < .01).

In addition, PEOU was hypothesised to be positively associated with PU, which is well supported (β = .49, p < .01).

Of the new paths added, both are substantive, with that of PV on PU being moderate (β = .41, p < .01) and that of FC on PEOU being very large (β = .84, p < .01).

Various effects hypothesised are small and non-significant, including those of risk, PV and FC on intent to purchase, and trust on PEOU.

Table 6 below shows the decomposition effects for these results, focusing on PI and PU, given that the former is the focal outcome, and PU seems to act as a major central variable.

Table F Decomposition results for the main SEM model

	Endogenous variables	
"Causal" variables	**PU**	**Intent to Purchase Online**
PU		
Direct effect	-	.17*
Indirect effect	-	-
Total effect	-	.17*
PEOU		
Direct effect	.49***	.26***
Indirect effect	-	.08*
Total effect	.49***	.34***
Trust		
Direct effect	.02	.11
Indirect effect	.22***	.16***
Total effect	.24***	.26***
Risk		
Direct effect	-	-.03

Indirect effect	-	-
Total effect	-	-.03
PV		
Direct effect	.46***	.00
Indirect effect	-	.08
Total effect	.46***	.08
FC		
Direct effect	-	-.02
Indirect effect	.22***	15***
Total effect	.22***	.13***
Prior experience		
Direct effect	-	.27***
Indirect effect	-	-
Total effect	-	.27***

*Notes: All paths modelled are standardised. *** = p < .01, ** = p < .05, * = p< .10*

As can be seen in Table 6, it is necessary to take into account the very important indirect effects in the model due to the striking implications for total effects. Therefore, it should be used to consider the hypotheses being tested in this study. The highest total impact on intent to purchase is PEOU (β = .34, p < .01). Trust becomes a significant antecedent of PI in total (β = .26, p < .01), as well as a significant driver of PU almost entirely through indirect effects (β = .24, p < .01).

The last results section discusses the moderation findings.

4.4 Moderation Effects

The moderation effects of the COVID-19 impact are estimated using the classic Baron and Kenny (1986) method, i.e. a classic multiple regression is created using PI as the dependent variable. The other main variables, as seen in the SEM model, are used as predictors. Finally, the addition of an "interaction" variable that is the multiplication of a focal predictor and the moderator (COVID-19 impact) is used. Should the interaction variable be significant and large enough, Lee (2016) suggests a standardised $\beta \geq .10$ for the size criterion), then the moderation is deemed substantial and assessed.

Table 7 shows all the parameters for both the base model without an interaction effect as well as each interaction model. As seen there, only the interaction effect with FC is not significant; therefore, this interaction is not analysed further.

Table G Parameters of significant moderator variables

		Moderation of COVID impact with focal variable					
	Base model	**Risk**	**Trust**	**PV**	**PEOU**	**PU**	**FC**
Experience	.13***	.13***	.13***	.13***	.13***	.13***	.14***
PU	.22***	.21***	.24***	.21***	.24***	.26***	.23***
Risk	.03*	.03*	.04**	.03*	.04**	.04**	.04*
PEOU	.30***	.30***	.29***	.30***	.27***	.27***	.29***
PV	-.07	-.07	-.09*	-.07	-.09*	-.10*	-.08
FC	.00	.00	.00	.00	.00	.00	.00
Trust	.08	.08**	.07*	.08**	.07*	.06	.08*
COVID-19 impact	.37***	.39***	.35***	.39***	.35***	.33***	.42***
COVID-19 x Focal antecedent		-.09***	-.08***	-.09***	-.07***	-.11***	-.01
R^2	.70	.72	.71	.72	.71	.71	.70

*Notes: *** = p < .01, ** = p < .05, * = p< .10.*

The results of the moderations can be seen better in typical interaction graphs, as seen in Figures 6 to 10. In each of these figures, representative levels of the focal independent variable are chosen at −1 and +1 standard deviation, and representative levels of the moderator are chosen at −1 and +1 standard deviations, as well as 0 since the variables are centred around 0.

Figure 6 shows the moderation effect of COVID-19 on the relationship between risk and PI. As seen in both the SEM results (Figure 6) and the multiple regression base model (Table 7), risk has a low main effects association with PI. However, there is a substantial moderation effect, as seen in Figure 6, such that increasing risk has a negative effect on PI under high COVID-19 impact conditions and, in fact, a positive impact when COVID-19 risk is deemed low.

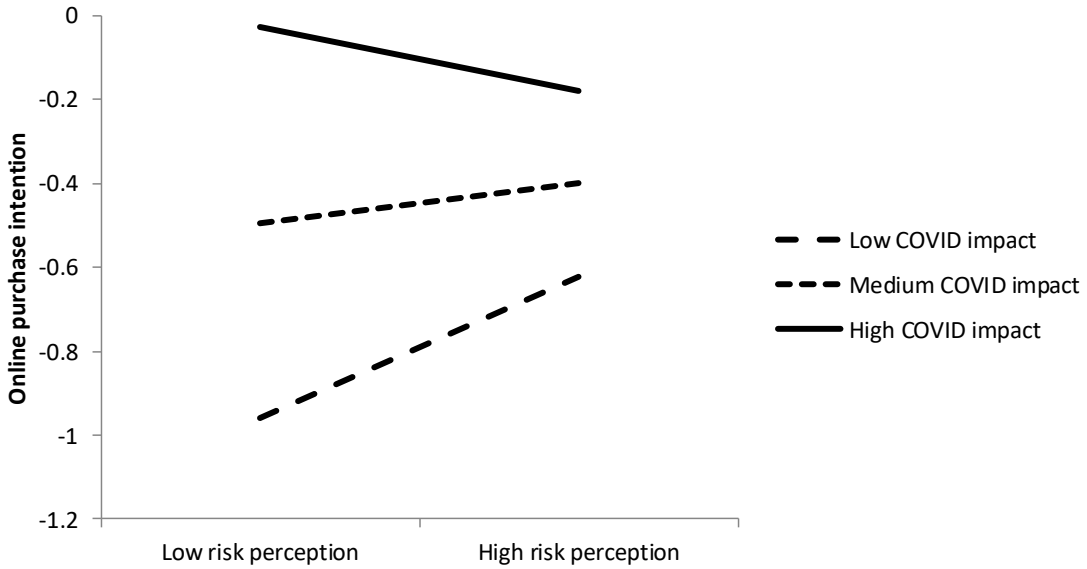


Figure 6 Moderating Influence of Covid-19 Impact on the Risk and PI Relationship

Figure 7 shows the moderating relationship of COVID-19 on the relationship between trust and PI. Like risk, the overall results of trust on PI is modest; however, as seen in Figure 7, trust becomes a more powerful predictor of intent, the less that individuals perceive COVID-19 as an issue.

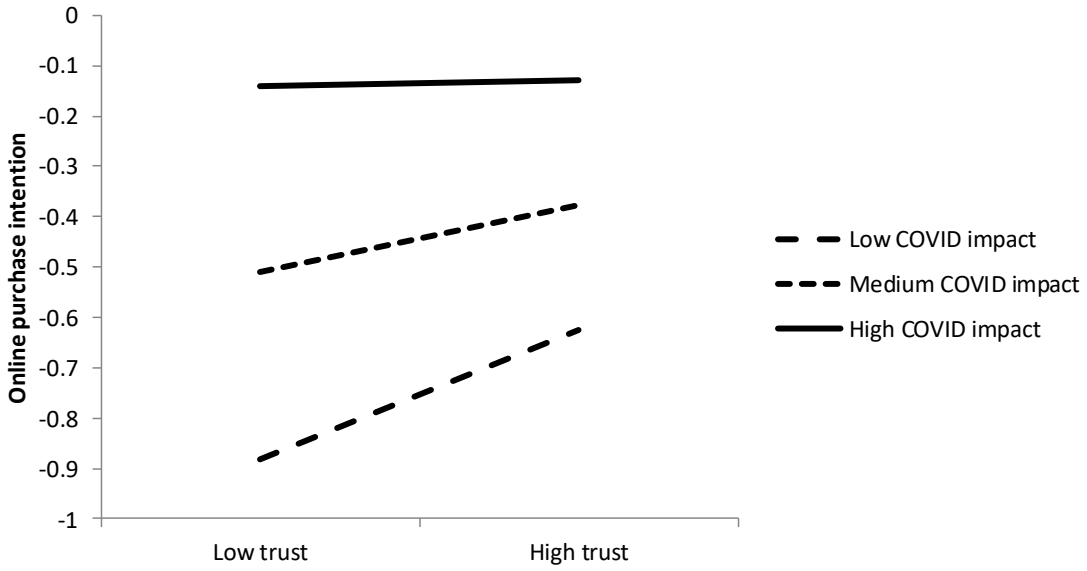


Figure 7 Moderating Influence of Covid-19 on the Trust and PI Relationship

The next moderation effect examined is on the relationship between PV and PI in Figure 8. Once again, PV has very little main effect in the models; however, a higher COVID-19 impact increases a negative relationship between PV and PI.

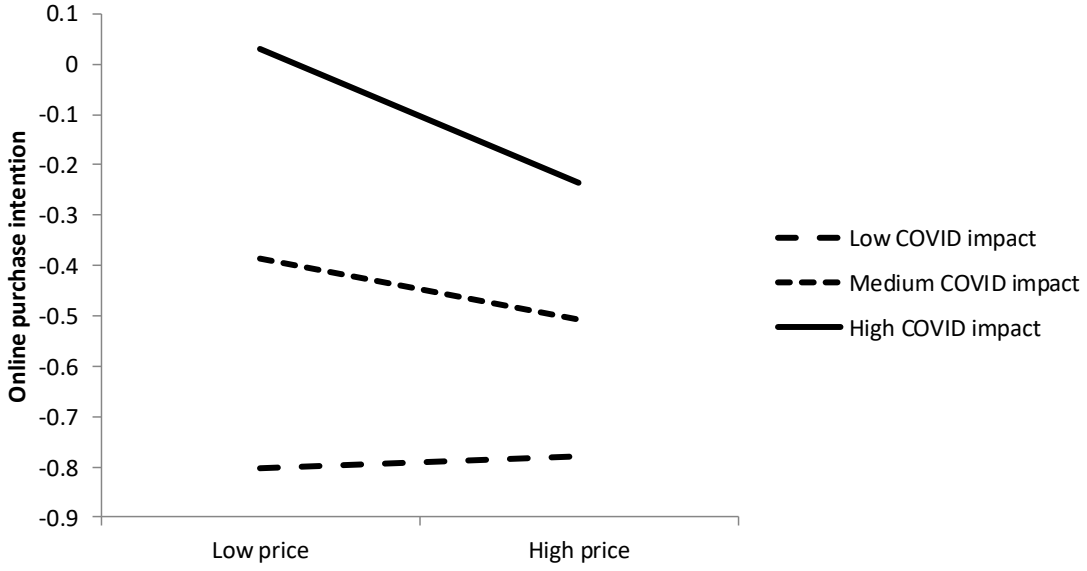


Figure 8 Moderating Influence of Covid-19 Impact on the PV and PI Relationship

The weakest of the moderating effects is that of COVID-19 on the relationship between PEOU and PI. As seen in Figure 9, there is a modest moderation effect

in terms of which high COVID-19 impact marginally decreases a positive relationship between PEOU and PI.

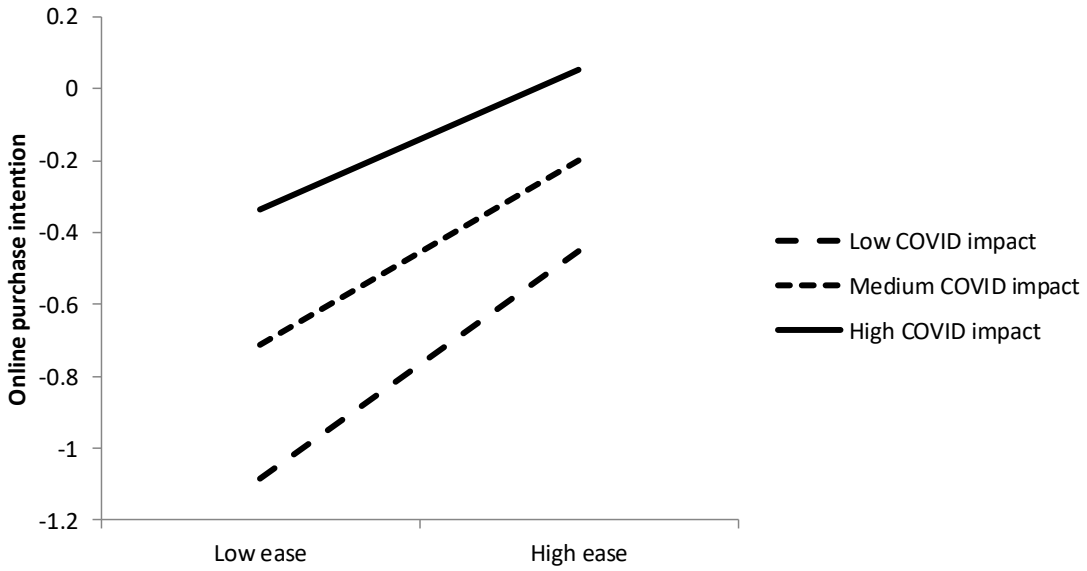


Figure 9 Moderating Influence of Covid-19 Impact on the PEOU and PI Relationship

Finally, COVID-19 moderates the positive relationship between PU and PI, in terms of which higher perceived COVID-19 impact reduces the strength of this relationship. This moderation relationship is seen in Figure 10.

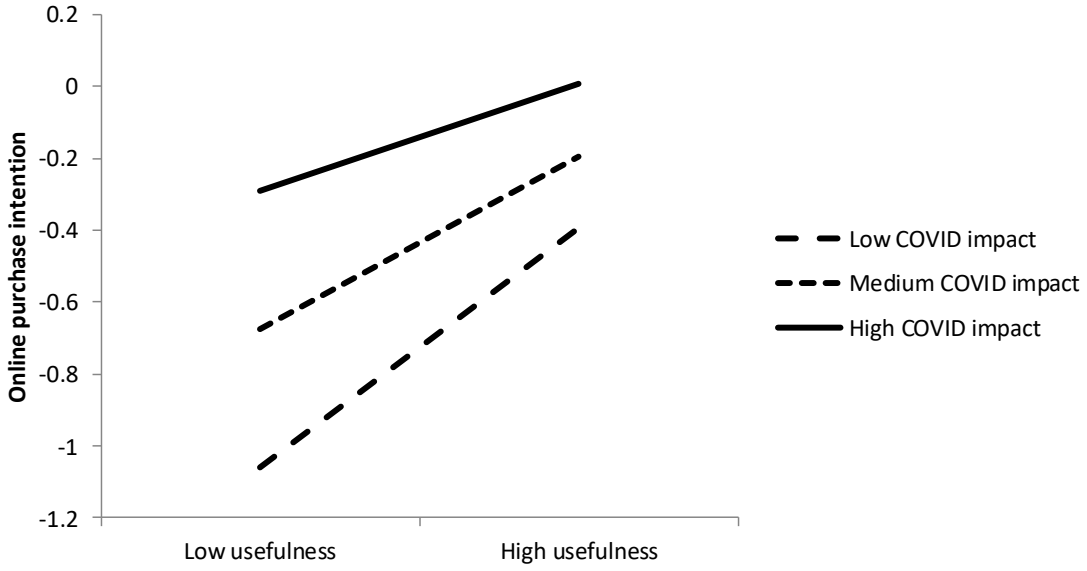


Figure 10 Moderating Influence of Covid-19 Impact on the PU and PI Relationship

The next two chapters discuss these results and draw conclusions for the research report.

CHAPTER 5. DISCUSSION OF THE RESULTS

5.1 Introduction

The impact of the Covid-19 pandemic thus far has proven to have devasting impacts on societies across the world. In addition, the economic impacts will have long-lasting consequences for countries. In a South African context, there is an opportunity to leverage online retail to mitigate some of the negative impacts of the Covid-19 pandemic on the economy. Therefore, an understanding of the critical constructs of consumer perception of online retail in a Covid-19 environment can provide much-needed insight for businesses and countries to be able to react appropriately. The key constructs are examined in this research, and the findings are discussed in this chapter.

The chapter begins with a brief summary of the hypothesis and the outcome of the measures. The seventeen hypotheses are then presented, and the findings discussed. The additional relationships that were identified during the analysis phase are also discussed in this chapter. The chapter concludes by discussing the moderation impact of Covid-19 on the other constructs in the model.

5.2 Summary of Results

Table 8 is a high-level view of each hypothesis and the outcome of the research. Each hypothesis will be discussed in detail.

Table H Results of Hypothesis Summary

Hypothesis	***Measure***	***Result***	***Outcome***
H1	***Risk is negatively associated with consumer PI***	β = -0.03; p-value >0.10	Not Supported
H2	***Trust is positively associated with consumer PI***	β = 0.11; p-value > 0.10	Not Supported
H3	***Trust is negatively associated with consumer perceived risk***	β = 0.02; p-value > 0.10	Not Supported
H4	***PU is positively associated with consumer PI***	β = 0.17; p-value < 0.10	Not Supported
H5	***Trust is positively associated with consumer PU***	β = 0.02; p-value > 0.10	Not Supported
H6	***PEOU is positively associated with PI***	β = 0.26; p < 0.01	Supported
H7	***Trust is positively associated with consumer PEOU***	β = 0.46; p < 0.01	Supported

H8	***PEOU is positively associated with consumer PU***	β = 0.49; p < 0.01	Supported
H9	***PV is positively associated with PI***	β = 0.00; p-value > 0.10	Not Supported
H10	***FC is positively associated with consumer PI***	β = -0.02; p-value > 0.10	Not Supported
H11	***Covid-19 is positively associated with consumer PI***	β = 0.32; p < 0.01	Supported
H12	***Perceptions of the Covid-19 impact act as a moderator such that the relationship between trust and PI is stronger when Covid-19 impact is higher***	β = -0.08; p < 0.01	Moderation Impact Supported; however, the moderation impact of Covid-19 on trust weakens its relationship with PI instead of strengthening it.
H13	***Perceptions of the Covid-19 impact act as a moderator such that the***	β = -0.11; p < 0.01	Moderation Impact Supported; however, the

	relationship between PU and PI is stronger when Covid-19 impact is higher		moderation impact of Covid-19 on PU weakens its relationship with PI instead of strengthening it.
H14	***Perceptions of the Covid-19 impact act as a moderator such that the relationship between PEOU and PI is stronger when Covid-19 impact is higher***	β = -0.07; p < 0.01	Moderation Impact Supported; however, the moderation impact of Covid-19 on PEOU weakens its relationship with PI instead of strengthening it.
H15	***Perceptions of the Covid-19 impact act as a moderator such that the relationship between PV and PI is stronger when Covid-19 impact is higher***	β = -0.09; p < 0.01	Moderation Impact Supported; however, the moderation impact of Covid-19 on PV weakens its relationship with PI instead of strengthening it.

H16	***Perceptions of the Covid-19 impact act as a moderator such that the relationship between FC and PI is stronger when Covid-19 impact is higher***	β = -0.01; p-value >0.10	Not Supported
H17	***Perceptions of the COVID-19 impact act as a moderator such that the relationship between risk and PI is weaker when COVID-19 impact is higher***	β = -0.09; p-value <0.01	Moderation Impact Supported; however, the moderation impact of Covid-19 on risk strengthens its relationship with PI instead of weakening it.
Additional Relationship 1	***Price Value is positively associated with perceived usefulness***	β = 0.46; p < 0.01	Supported
Additional Relationship 2	***Facilitating Conditions is positively associated with***	β = 0.46; p < 0.01	Supported

	perceived ease of use		
Additional Relationship 3	***Consumer online shopping experience is positively associated with PI***	$\beta = 0.27$; $p < 0.01$	Supported

5.3 Main Model Impacts

5.3.1 *Trust, Risk and PI*

H1: Risk is negatively associated with consumer PI

The results of the research do not support H1. This research was conducted during strict lockdown conditions in SA. Consumers access to goods and services were restricted, and only essential goods and services were available through physical channels. Therefore, even though consumers may perceive online shopping as risky, they had little choice but to use online retailers to make purchases. This finding is similar to Suh, Ahn, Lee, and Pedersen (2015), who also found that the relationship between risk and consumers online PI is insignificant. Ventre and Kolbe (2020) also found no association between risk and consumers online PI.

Online retail is prevalent all across the world, and consumers are now a lot more tech-savvy. Therefore, risk perceptions may not influence online shopping to the extent that previous studies have shown.

The earlier research on this topic was conducted when online retail was still in its infancy and at the growth stage; therefore, consumers perception of risk had a

negative impact on PI (Dinev et al., 2006; Featherman & Pavlou, 2003; Garbarino & Strahilevitz, 2004; Glover & Benbasat, 2010; Hong, 2015; Kim et al., 2008; Liao et al., 2011; Mou et al., 2017; Pavlou, 2003; Shukla, 2014; Sondhi, 2017). As online retail has grown, and consumers began to experience it, the benefits of it outweigh the risks associated with online retail. Many businesses have implemented risk relievers such as endorsements, brand loyalty, major brand image, private testing, store image, free sample, money-back guarantee, and word of mouth, to name a few, as postulated by Roselius (1971) to reduce risk perceptions over time.

In addition, the lockdown conditions in SA because of Covid-19 may have resulted in consumers bypassing their high-risk perceptions to purchase online because they had no or limited alternatives.

This is important for businesses to leverage this opportunity and provide more of their goods and services through online channels to grow their customer base. It is still essential that businesses continue to be proactive in mitigating against consumers risk perceptions of online retail. If consumers risk perceptions are validated when they shop online, repeat purchases are unlikely (Mou et al., 2019). Therefore online retailers should still place emphasis on limiting the risks that consumers face in online retail to increase repeat online purchases.

H2: Trust is positively associated with consumer PI

The results of the research do not support H2. The lack of correlation between trust and online consumer PI can again be attributed to the circumstances consumers find themselves in. This is in line with the finding that risk has no association with consumer PI. In a Covid-19 environment, trust in online retail seems to have little influence on whether customers intend to purchase online or not. Customers may have little choice but to purchase online during the lockdown period. This is contrary to many studies over the years that have shown that trust is a critical construct in positively influencing consumers PI (Dinev et al., 2006; Featherman & Pavlou, 2003; Garbarino & Strahilevitz, 2004; Glover & Benbasat, 2010; Hong, 2015; Kim et al., 2008; Liao et al., 2011; Mou et al., 2017; Pavlou, 2003; Shukla, 2014; Sondhi, 2017). These studies were conducted in fairly stable

environments, while the current environment in which the Covid-19 pandemic is dictating how consumers live and behave is changing how online retail is viewed and what constructs impact it. However, this is not an unusual finding as Van der Heijden, Verhagen, and Creemers (2003) observed that trust in the TAM does not significantly impact consumers PI.

H3: Trust is negatively associated with consumer perceived risk

The results of the research do not support H3. There is no support for the relationships between trust, risk and PI in this study. Again, this is in line with the findings from H1 and H2 because both risk and trust do not impact consumers PI in online retail. This further expounds on the impact that Covid-19 is currently driving in the way consumers perceive online retail. The previous research that tested and validated these constructs need to be re-tested in the current scenario.

5.3.2 *PU, Trust and PI*

H4: PU is positively associated with consumer PI

There is limited support for H4 in this research, albeit it is insignificant at a p-value of <0.05 and <0.01. Therefore, for the purposes of this research, H4 is rejected. This result is similar to that of risk and trust in that consumers are forced to shop online irrespective of the PU of online retail. The other constructs, such as PEOU, are more critical constructs to consumers online PI. The online shopping experience is more important to consumers than the usefulness derived from the products, services and convenience it offers (Ramayah & Ignatius, 2005). Ramayah and Ignatius (2005), in their study on online shopping, found that PU was also not a significant factor in consumer PI. This is not an uncommon result; other authors have also discovered similar results (Dachyar & Banjarnahor, 2017; Van der Heijden et al., 2003).

Van der Heijden et al. (2003) postulates that PU in the TAM model focuses on the use of technology instead of PI of online retail resulting in an insignificant relationship with PI. In online retail, PU can be associated with information on goods and services, which does not necessarily translate into online purchases.

Another explanation for this result is that PU can be viewed as a threshold or hygiene variable (Van der Heijden et al., 2003). According to Van der Heijden et al. (2003), threshold variables “mean once a certain evaluation level is reached, the variable no longer contributes to a favourable attitude” (p. 45). These variables will contribute to negatively impacting PI if, for example, PU is low; however, in instances in which consumer PU is high, it may or may not contribute to positive PI. In essence, PU is a hygiene factor that needs to be in place and is assumed to be in place by consumers; however, it does not directly impact PI (Van der Heijden et al., 2003). Therefore, PU can be associated as a threshold or hygiene variable that may have a limited impact on whether consumers purchase online or not. This is because the impact of Covid-19 will dictate whether consumers purchase online or not as this is a motivational factor, whereas PU is a hygiene factor (Van der Heijden et al., 2003). Therefore, consumers assume that online retail, in general, is useful, but it is not the driving factor that results in PI. The driving factor is Covid-19 for consumers. Risk, trust, PV and FC can also be considered threshold or hygiene factors as the same principles apply to these constructs.

H5: Trust is positively associated with consumer PU

The research does not support H5. This is in line with the findings of H3 in which trust does not impact risk. In addition, as explained above, both these constructs are considered to be threshold or hygiene constructs that do not have a direct impact on consumers online PI (Van der Heijden et al., 2003). The overriding environment in which the Covid-19 pandemic is dictating consumer behaviour is what is driving consumers intention to purchase online.

5.3.3 *PEOU, Trust, PU, and PI*

H6: PEOU is positively associated with PI

The research supports H6. PEOU has a positive direct impact on consumers online PI. This finding validates previous research that shows PEOU impacts consumers online PI positively (Cho & Sagynov, 2015; Guritno & Siringoringo,

2013; Hansen et al., 2018; Li et al., 2020; Mwiya et al., 2017; Pavlou, 2003; Van der Heijden et al., 2003).

Even in the current Covid-19 environment, PEOU is still a relevant construct in determining consumers online PI. Constructs such as risk, trust and PU may not be relevant in the current environment; however, consumers still require online retail sites to be user-friendly, easy to navigate and be able to complete transactions seamlessly (Cho & Sagynov, 2015). PEOU is critical irrespective of the environment in which the consumer finds themselves in.

This is an important construct for businesses to focus on to ensure engagement with consumers when they interact with them online. The PEOU of an online retailer site will ensure that consumers do not exit before making a purchase and will also limit visits to competitor sites. It is also important to ensure that consumers consider the online retailer for future purchases because of their positive experience on the retailers' website.

H7: Trust is positively associated with consumer PEOU

There is support for H7 in this research. Although trust does not impact PI, risk and PU in this study, it does significantly impact PEOU positively. This corroborates Pavlou (2003) findings that show when consumers have high trust in online retailers, then they do not assess their websites with the same level of scrutiny when trust is low. Trust is, therefore, an antecedent of PEOU and has an indirect impact on PI. Even in the current Covid-19 environment, trust plays an important role in determining consumers PI indirectly through its impact on PEOU.

H8: PEOU is positively associated with consumer PU

The research supports H8 significantly. PEOU does impact consumers PI not only directly but also indirectly through its impact on PU. More importantly, it is a critical construct that drives consumers perceptions about online retail in general. The results of the positive impact of PEOU on PU is in line with previous studies (Cho & Sagynov, 2015; Ozturk et al., 2016; Pavlou, 2003; Ramayah & Ignatius, 2005; Van der Heijden et al., 2003).

PEOU has the most significant impact on consumers PI through its direct and indirect impact in this study. Ramayah and Ignatius (2005), in their research, also discovered that PEOU is one of the main drivers for consumers to shop online.

5.3.4 *PV and PI*

H9: Price Value is positively associated with PI

There was no support for H8 in this research. PV does not impact consumers online PI. This finding is similar to that of risk, trust and PU. Again, the Covid-19 pandemic environment that consumers find themselves in overrides consumers PV perceptions of online retail. Whether consumers perceive they are gaining a cost-benefit or disadvantage from online retail, it is muted by the situational environment that they find themselves in. Therefore, consumers may be forced to shop online, whether their PV from shopping online is positive or negative. Another reason is that PV may also be considered a hygiene factor similar to risk PU, trust and FC. Consumers naturally assume that their PV from online retail is positive, and therefore it is not a motivational factor to drive PI. This is contrary to previous studies that were conducted that found PV to have a positive impact on PI (Kim et al., 2007; Venkatesh et al., 2012).

Additional Relationship 1: Price Value is positively associated with perceived usefulness

However, during the analyses of the data using the SEM technique, a relationship between PV and PU was identified. The relationship is significant and directionally is expected. If consumers perceive high PV, then their PU will also be high. This is because both constructs encapsulate the positive utility of shopping online versus the negative utility. It follows the valence framework theory, which states that consumers perceive positive and negative utility value from completing a transaction (Mou et al., 2019; Peter & Tarpey Sr, 1975). Therefore consumers seek to minimize their negative utility, which results in the difference between the positive utility and the negative utility being their net utility or valence (Mou et al., 2019; Peter & Tarpey Sr, 1975). Mou et al. (2019), in their study to understand consumers repeat PI discovered that monetary savings had

a positive impact on overall consumer utility value. In another similar study by Chiu, Wang, Fang, and Huang (2014), they also found that monetary savings impacts utility value positively. Therefore, the findings in this study support the relationship of PV positively impacting PU.

5.3.5 *FC and PI*

H10: Facilitating conditions is positively associated with consumer PI

The research does not support H10. This again is in line with the other findings in this research, which demonstrates irrespective of consumers perceptions, Covid-19 determines their online PI in the current environment.

Additional Relationship 2: Facilitating Conditions is positively associated with perceived ease of use

However, during the analyses of the data, a significant relationship between FC and PEOU was discovered. This is not an uncommon relationship and is supported by findings in previous research (Hamzat & Mabawonku, 2018; Teo, 2009; Teo & Milutinovic, 2015; Venkatesh, 2000). This additional relationship is more insightful than the previous additional relationship identified. This is because it has an impact on PEOU, which has a positive impact on consumers online PI. FC provides the enabling environment that contributes to consumers perception of the ease of use of online retail, which in turn has a positive impact on consumers online PI. This is a critical relationship in a SA context due to the lack of access to digital technologies to a large portion of the population. The implications of this are discussed in the next chapter.

5.3.6 *Covid-19, Experience and PI*

H11: Covid-19 is positively associated with consumer PI

There is support in this research for H11. Covid-19 has the most significant direct impact on consumers online PI. Situational factors act as a motivator that influences consumers to take a specific action (Haugtvedt et al., 1992). The Covid-19 pandemic is acting as a situational factor in the current environment

that is driving consumers perception of online retail and PI. As mentioned previously, the lockdown rules because of Covid-19 are resulting in consumers having little choice but to shop online due to the lack of alternatives. In addition, consumers are fearful of going out in public and prefer to complete their shopping online. Therefore, irrespective of consumers risk, trust, PU, PV and FC perceptions, they choose to shop online because of the impact that the Covid-19 pandemic is driving in the current environment. Constructs such as risk, trust, PU, PV and FC can be viewed as hygiene factors in the current climate. The situational factor Covid-19 is the motivational factor in the current climate that is driving consumers PI. This is evidenced by the findings of the other constructs impact on consumers online PI in this study.

This is a critical finding because Covid-19 will still have a major impact in SA and around the world in the short to medium term. Therefore, retailers need to ensure that they can capitalise on the opportunity to grow their sales through online retail.

Additional Relationship 3: Consumer online shopping experience is positively associated with PI

During the analyses of the data, a significant relationship between consumer online shopping experience and PI was discovered. Venkatesh (2000) and Venkatesh et al. (2012) found in their study that experience plays a significant role in determining consumers behaviour intention. Consumer online shopping experience is an important factor that is significant in determining PI (Rose, Hair, & Clark, 2011). There is support for this in other research that postulates the importance of online shopping experience in determining PI (Hasanov & Khalid, 2015; Li, Kim, & Park, 2007). Therefore, the final model includes experience as a factor in the model, and its implications in a South African context will be discussed in the next chapter.

5.4 Moderation Impacts

5.4.1 *Covid-19, Trust and Risk*

H12: Perceptions of the Covid-19 impact act as a moderator such that the relationship between trust and PI is stronger when Covid-19 impact is higher

There is support for the moderation impact of Covid-19 on trust in this research; however, contrary to H12 Covid-19 moderates the relationship between trust and PI such that it is weaker when the Covid-19 impact is higher. Therefore, a critical insight is that trust is a more important construct the less consumers perceive Covid-19 as a threat. The research shows that under a high consumer perception of Covid-19 as a threat that trust plays a minimal role in consumers intention to purchase online.

There is limited to no research at this present time on the impact of the Covid-19 pandemic on consumers perceptions of online retail as well as its moderating impact on other constructs. Therefore, this finding is important to assist researchers in understanding the impact of situational constructs on consumers perceptions. This research confirms other research on situational factors and it's importance in predicting consumer behaviour (Ajzen et al., 1982; Baron & Kenny, 1986; Dabholkar & Bagozzi, 2002; Monsuwé et al., 2004)

H17: Perceptions of the COVID-19 impact act as a moderator such that the relationship between risk and PI is weaker when COVID-19 impact is higher

There is support for the moderation impact of risk in this research; however, contrary to H17 Covid-19 moderates the relationship between risk and PI such that it is stronger when the Covid-19 impact is higher. When consumers perceive Covid-19 as a threat, then under a high-risk perception, their intention to purchase is lower than when their risk perception is low. This may seem contrary to the earlier finding that rejected H1, which shows no relationship between risk and PI. However, the research shows that overall that there is no correlation between risk and PI. However, when the Covid-19 threat is high, consumers are more risk-

averse and will use their level of risk perception to determine their online PI. Under an environment of low Covid-19 threat, consumers are less concerned about the risk of shopping online. This can be due to consumers being more positive about the environment in which they find themselves when Covid-19 is not a threat. In a high threat of Covid-19 environment, consumers are concerned about the circumstances that surround them; therefore, they are more likely to be more cautious about the decisions they make when it comes to online retail.

The results from this study support the findings of other researchers on the moderating impact of situational factors impacting consumer behaviour (Ajzen et al., 1982; Baron & Kenny, 1986; Dabholkar & Bagozzi, 2002; Monsuwé et al., 2004).

This finding substantiates that Covid-19 has the largest impact on consumers PI in the current environment that consumers find themselves in.

5.4.2 *Covid-19, PU, and PEOU*

H13: Perceptions of the Covid-19 impact act as a moderator such that the relationship between PU and PI is stronger when Covid-19 impact is higher

There is support for the moderation impact of Covid-19 on PU in this research; however, contrary to H13 Covid-19 moderates the relationship between PU and PI such that it is weaker when the Covid-19 impact is higher. The research shows that Covid-19 plays a more significant role than PU in determining consumers' online PI. Under a low threat of Covid-19, PU has a stronger impact on PI; the higher consumers perceive PU. Therefore, in line with the previous findings in this research, the relationship between PU and PI is stronger when Covid-19 is perceived as a low threat.

The findings support other research on the impact of situational factors on moderating the impact of other constructs on consumer behaviour (Ajzen et al., 1982; Baron & Kenny, 1986; Dabholkar & Bagozzi, 2002; Monsuwé et al., 2004)

Again, the results support the other findings in this research in that Covid-19 moderates the impact of PU and PI, to weaken the relationship. Therefore Covid-

19 is a stronger predictor of PI overall when consumers perceive a high threat of Covid-19.

H14: Perceptions of the Covid-19 impact act as a moderator such that the relationship between PEOU and PI is stronger when Covid-19 impact is higher

There is support for the moderation impact of Covid-19 on PEOU in this research; however, contrary to H14 Covid-19 moderates the relationship between PEOU and PI such that it is weaker when the Covid-19 impact is higher. The research shows that Covid-19 is the main driver of online consumer PI in a high threat of Covid-19 environment. Therefore, under a high perception of Covid-19 threat, PEOU has a less significant impact on PI when compared to a low threat Covid-19 environment. The moderating impact of Covid-19 on PEOU is similar to that of trust and PU, which demonstrates that the relationship between PEOU and PI is stronger when Covid-19 is perceived as a low threat.

The findings support other research on the impact of situational factors on moderating the impact of other constructs on consumer behaviour (Ajzen et al., 1982; Baron & Kenny, 1986; Dabholkar & Bagozzi, 2002; Monsuwé et al., 2004)

This reiterates the findings discussed in this study which substantiate that Covid-19 is a stronger predictor of PI overall when consumers perceive a high threat of Covid-19.

H15: Perceptions of the Covid-19 impact act as a moderator such that the relationship between PV and PI is stronger when Covid-19 impact is higher

There is support for the moderation impact of Covid-19 on PV in this research; however, contrary to H15 Covid-19 moderates the relationship between PV and PI such that it weakens the relationship when the Covid-19 impact is higher. Therefore, under a high threat of Covid-19 environment, a higher perception of PV results in lower PI. Therefore, it can be concluded that Covid-19 is the overriding construct that determines consumers PI irrespective of the impact of PV. In addition to this finding, in an environment in which Covid-19 perceptions are low, then the relationship between PV and PI is strengthened. Covid-19 is

dictating consumers perception of PI in online retail in the current environment. Consumers also seem to be seeking convenience more than the benefits of PV. PEOU is also a more significant construct than PV, as shown earlier. Therefore, irrespective of the PV perception, Covid-19 and other constructs play a more significant role in PI than PV.

H16: Perceptions of the Covid-19 impact act as a moderator such that the relationship between FC and PI is stronger when Covid-19 impact is higher

There was no support for H16 in this research. This is due to the fact that FC involves the external environment that consumers find themselves in. Covid-19 is a situational factor that has no bearing on consumers FC to conduct online retail. Therefore, the analysis was not able to provide any meaningful results on the relationship between Covid-19 and FC and was thus removed from the results.

5.5 Conclusion

The research supports the impact of Covid-19 and PEOU on PI. Covid-19 has the most significant direct impact on consumer PI in online retail, followed by PEOU. PEOU has the most significant impact on consumer PI due to both its direct and indirect effect on consumer PI in online retail. PEOU impacts PI indirectly through its impact on PU. Consumer online shopping experience was an additional relationship to the final model due to its significant direct impact on consumer online retail PI. The other two additional relationships added to the model are FC impact on PEOU and PV on PU. However, the impact of FC on PEOU is more meaningful due to the significant relationship of PEOU on consumer online retail PI. The moderation effect of Covid-19 on trust, PU, and PEOU was significant and showed that under conditions in which the threat of Covid-19 is high that it weakens the relationship of these constructs on consumer online PI. However, the Covid-19 moderating impact on risk strengthens its relationship with PI. The moderation impact of Covid-19 on FC was not significant and, therefore, not included in the final results. The results of this study

emphasise the significant impact of Covid-19 in shaping consumers behaviour in online retail.

CHAPTER 6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter summarises the conclusions of research questions 1a and 1b. Implications of these findings for businesses and SA are then discussed. Finally, the chapter discusses the study limitations and provides suggestions for future studies.

6.2 Conclusions regarding research question 1a

Research Question 1a. What is the significance of risk, trust, PU, PEOU, PV, FC, and Covid-19 on consumer PI in online retail in SA?

This study shows that Covid-19 and PEOU are the most significant constructs for determining consumer online retail PI under the current pandemic setting in SA. In addition, online shopping experience was found to significantly affect PI. This factor was included as a control variable in the original hypothesised model. However, it was found to be significant in determining PI during data analysis and, therefore, was included in the final model.

The situational construct Covid-19 had the most significant direct effect on consumer PI in this study. It is the overriding factor driving consumers to shop online irrespective of their risk, trust, PU, FC, and PV perceptions. Therefore, previous research findings, for example, those of Glover and Benbasat (2010), Pavlou (2003), and Venkatesh et al. (2012), may not be applicable in the current scenario.

PEOU had the most significant impact when assessing both its direct and indirect influence on consumer online PI. Although Covid-19 was an overriding factor for consumers to shop online, the PEOU of online retailers seemed to be a critical construct for encouraging online purchases.

Online shopping experience was also a significant construct impacting the PI of consumers. In a South African context, this is important because many citizens do not have the required resources to shop online. Consumers may not be familiar with shopping online, and the process may seem complex. However, as consumers experiment and increase their frequency of online retail, they are more likely to prefer online shopping in the future.

Risk, trust, PU, PV, and FC did not have a significant impact on online consumer PI in the pandemic scenario. However, trust, PV, and FC had an indirect impact on consumers' online PI. Trust significantly affects consumer PEOU as those with a high level of trust in online shopping do not critically examine the offering and process. PV had a significant effect on PU. This is expected because both construct characteristics are based on net benefits or valence (i.e., positive and negative utility of online shopping). FC such as availability of infrastructure and services conducive to online shopping has a significant effect on consumer PEOU.

An important insight from this study is that risk, trust, PU, PV and FC can be viewed as hygiene factors because of the continuous evolution and maturity of the online retail market (Van der Heijden et al., 2003). These constructs are essential and need to be in place to ensure the needs of customers are addressed. Consumers may assume that these constructs are prevalent in online retail sites. However, as an example, for an online retail site, if trust is low and risk is high due to lack of necessary mechanisms for trustworthy business, then consumers PI will be low. Thus, a negative perception will lead to low PI, whereas a positive perception may or may not result in a high PI.

This study is relevant for business in the pandemic environment and into the future because the associations between key constructs that impact consumer online PI are evolving and altering. They need to be continually tested to understand the changes in consumer perceptions that impact their PI. Moreover, the critical role of Covid-19 in shaping consumers online retail PI cannot be overlooked.

6.3 Conclusions regarding research question 1b

Research Question 1b. What is the moderation impact of Covid-19 on risk, trust, PU, PEOU, PV, and FC on consumer online PI in SA?

The moderation impact of Covid-19 was significant on risk, trust, PU, PEOU, and PV. The Covid-19 factor did not moderate the relationship between FC and PI. Therefore, it was excluded from the final results.

Covid-19 moderated the effect of trust, PEOU, and PU such that the relationship between these constructs and PI overall are weak under a high-threat environment compared to a low-threat Covid-19 scenario.

Overall, the relationship between trust and PI is weaker in a high-threat than in a low-threat Covid-19 environment (i.e., the relationship between trust and PI is stronger in a low-threat Covid-19 environment). This finding is in line with the data obtained from research question 1a that Covid-19 has the most significant direct impact on consumer online PI.

Covid-19 moderates the relationship between PEOU and PI in the current environment. The relationship between PEOU and PI was weaker in a high-threat than in a low-threat Covid-19 environment (i.e., the relationship was slightly stronger in a low-threat Covid-19 environment). Therefore, both Covid-19 and PEOU are critical predictors of PI, and they are all the more important in the current environment.

Covid-19 also moderated the relationship between PU and PI. The relationship between PU and PI was weaker in a high-threat than in a low-threat Covid-19 environment (i.e., the relationship was stronger in a low-threat Covid-19 scenario).

Risk was moderated by Covid-19 and strengthened the relationship between risk and PI. The relationship between risk and PI was strengthened (i.e., risk negatively impacted consumers' online PI) in a high-threat compared to a low-threat Covid-19 environment. The situational factor again significantly affected consumers' perceptions of online retail. This is an interesting finding because

Covid-19 results in consumers taking a more risk-averse and cautious approach to online retail. Consumers are experiencing the effects of Covid-19 in several aspects of their lives (i.e., social, health, work and so forth), and this negative association is reflected in their online retail risk perceptions. Therefore, consumers are more cautious in a high-threat Covid-19 environment.

PV is moderated by Covid-19 and weakens the relationship between PV and PI. PV demonstrated an inverse relationship with PI under a high-threat Covid-19 environment and, therefore, is not a good predictor of PI. However, in a low-threat Covid-19 environment, the relationship between PV and PI was slightly stronger. Due to PV being a hygiene factor, once a certain threshold is reached, it does not contribute to consumer PI. Therefore, it can be concluded that Covid-19 is the overriding construct that determines consumers' online PI.

The findings in this study confirm the significant direct impact of Covid-19 on consumer PI. The situational factor moderates the relationships of consumer PI and validates previous research on situational factors acting as a moderator (Ajzen et al., 1982; Baron & Kenny, 1986; Dabholkar & Bagozzi, 2002; Monsuwé et al., 2004)

6.4 Implications of this Study

6.4.1 *Implications for Businesses*

The five largest online retailers in SA in terms of traffic are Takealot, Amazon, Bidorbuy, Ebay, and Makro (Goga, Paelo, & Nyamwena, 2019). Two out of the top five are international online retailers Amazon and Ebay. As consumers move more of their purchases to online channels, businesses have to invest in digital capabilities or take on the risk of not being relevant to consumers. Takealot is by far the largest online retailer in the country (Goga et al., 2019). Furthermore, the market dominance of Takealot poses a challenge to traditional businesses due to a winner takes all market being prevalent. Digital disruption and now the Covid-19 pandemic is accelerating online business models, which is resulting in the collapse of traditional business models. This is evidenced by the demise of the

Clicks group Musica portfolio (Phillip, 2021). It is evident from the market structure and competitors that businesses do not understand what construct/s to focus on from a consumer perspective and do not understand the significance of this market.

This study provides important insights for businesses to adapt their online business models and become more relevant to consumers. Businesses have the opportunity to capitalise on the opportunity that Covid-19 is creating in the market. PEOU is critical to consumers, and, therefore, businesses need to place emphasis on designing user-friendly websites. User experience needs to be a top priority for online retail sites. The complete end-to-end process also needs to be seamless to ensure consumers follow through with online purchases. The fulfilment of goods and services cannot be overlooked and needs to also be a seamless experience. This complete end-to-end process not only ensures the conclusion of a successful sale but also promotes repeat purchases. Furthermore, the use of digital technologies such as Artificial Intelligence (AI) to assist consumers through their online purchase decision will increase PEOU. Chatbots powered by AI technologies has the potential to provide a superior online shopping experience. This will increase consumers' trust in an online retailer, which further positively impacts their PEOU. This study has shown the importance of trust as an indirect predictor of PI through PEOU. Although hygiene factors, such as trust, risk, PU, and PV, need to be in place and are expected by consumers, PEOU is a driving factor that results in consumers making an online purchase. Online retail sites that are difficult to navigate and find goods and services will deter consumers from purchasing. Therefore, because of the perceived impact of PEOU on PI, businesses must ensure a seamless experience for consumers through their online offerings.

WARC (2020) predicted that digitisation would accelerate in this new era. It coined the term "tech-celleration," which refers to increasing penetration of technology in our daily lives in all aspects. As consumers, specifically in a South African context, enhances their familiarity with digital technologies, their confidence to shop online will be boosted. This study demonstrates that consumer online shopping experience plays an important role in PI. Therefore, to

attract new customers, businesses need to entice consumers to their online sites by providing them with engaging and useful content, product specifications, discounted deals for signing up, targeted marketing campaigns, and so forth. This will increase the likelihood of consumers purchasing online. As consumers become more familiar with online retail, future purchases become more likely.

Another innovative solution is for businesses to create a shopping app that can be zero-rated in terms of data usage. This is similar to the banking industry in SA where most banks have applications that do not require consumers to use their data to benefit from them. This will enable a larger consumer base, especially those that are marginalised and do not have access to data, to be able to explore online shopping. This will increase experience in online retail and result in increased online sales.

The effects of the situational factor Covid-19 impact will continue for a long time into the future; therefore, it will remain a critical construct that determines consumers' online PI. Traditional businesses with brick-and-mortar stores need to transition more of their goods and services online. They need to do this rapidly as consumers will find alternative channels and retailers to purchase their goods and services from. As evidenced by Takealots dominance in online retail in SA, businesses that fail to act now will lose customers to online competitors. This will result in customer loyalty to a few leading online retailers, and the chances of customers moving to other businesses are reduced. Therefore, traditional businesses need to leverage their physical stores and locations as satellite distribution centres to deliver goods based on consumers location. They can outsource the delivery to ensure the efficiency of fulfilment. Online product and service categories can be region or local specific based on a user's location. These are just some of the expedited processers that retailers can put in place during this period to grow their sales and their online capability.

The implications of this study provide many opportunities for businesses to focus on to become agile and innovative to drive their online sales. The key constructs that businesses can focus on in the short term are exploiting the opportunities presented by Covid-19, placing emphasis on consumers PEOU, and encouraging consumers to gain online retail experience. This needs to be done without

overlooking the hygiene factors of trust, risk, PU, and PV, which still need to be in place. The results of following such an approach will provide new sales, repeat purchases, and growth of the customer base.

6.4.2 *Implications for SA's Digital Maturity*

In SA, there has not been a lockdown, such as the one currently occurring. The early indications are that although lockdown restrictions may relax, the effects of it will have a lasting impact on many aspects of individuals lives.

In SA, the consequences of this pandemic will have dire consequences because of the economic structure (Gossel & Koelble, 2020). Both the tourism sector and commodities have been heavily affected by the global pandemic (Gossel & Koelble, 2020). Gossel and Koelble (2020) warn that the societal impacts could be devastating through millions of job losses and thousands of businesses closing down.

Countries that lag in their digital maturity in the 4IR and low touch economy run the risk of stagnating growth, which will have negative economic and social impacts (Armstrong, 2020a; Mey & Ridder, 2020). This is even more applicable in the current Covid-19 environment, which is affecting all areas of consumers' lives. Online retail plays a crucial role in improving a country's digital maturity by enabling businesses to expand their reach in the market. It also allows businesses to operate low-cost business models, thereby creating value for both the business and consumers. The low touch economy provides an opportunity for a bottom-up approach by focusing on online retail at a consumer level to improve countries digital maturity

It is, therefore, essential that governments create an environment that enables e-commerce. One of the key findings of this study is that consumers' online retail experience significantly impacts online retail PI. Another finding from the study is that FC has an indirect impact on consumers' online retail PI. A large portion of the South African population does not have access to the infrastructure that promotes the use of digital technologies. In addition, online retailers find it difficult to deliver and fulfil products and services to the majority of the population due to

historic geospatial planning challenges (i.e., rural and township locations). This has all resulted in the digital divide in the South African population. Van Dijk (2017) defines the digital divide as “the gap between people who do and do not have access to forms of information and communication technology” (p.1). It refers to access (infrastructure, hardware & software), skills to use technology, motivation to use technology, usage opportunities and impact (Van Dijk, 2017; Van Dijk & Hacker, 2003). Growth in online retail can play a crucial role in reducing the digital divide in SA and thereby improving the country’s digital maturity.

Therefore, the SA government plays a critical role in promoting online retail through improving the infrastructure and regulation to ensure there is a fair distribution of resources across the population. An example is the reduction of data costs, specifically to the low-income population, will lead to broader access to digital technologies. This, in turn, leads to more consumers gaining knowledge and experience in digital technologies and online retail. This will open up further opportunities in the industry, with new players entering and providing innovative solutions to consumers. This will result in the exploration and rapid expansion of digital technologies and solutions that could result in SA becoming a significant player in the 4IR era. The SA population will grow and evolve with the new technology changes and become a more tech-savvy population. Therefore, focusing on online retail can result in driving digitalisation, springboarding other sectors, improving consumer sophistication and driving digital maturity in SA.

Lastly, due to the significance of Covid-19’s impact on online retail in SA, the government can also play a significant role in promoting e-services. This will promote digital knowledge, reduce the digital divide and increase consumers experience in digital technologies and online retail. They should also consider providing incentives for businesses such as start-ups that are seeking to enter the e-commerce industry.

The role of SA’s Government is just as critical as that of businesses in driving online retail. If anything Government can be the catalyst that can ignite businesses to become innovative and drive the online retail sector. The concerted

effort by both the private and public sector will result in lasting social and economic benefits for business, consumers and the country.

6.5 Limitations of the study and suggestions for further research

This was a quantitative study, and the results must be interpreted with caution. Therefore, these findings can be further validated in a robust qualitative study to understand the underlying perceptions of consumers.

The Covid-19 situation is evolving rapidly, implying the need for extensive research to understand whether consumer perceptions in online retail are evolving at the same rate as the pandemic. This was also a cross-sectional study; therefore, follow-up studies are required to provide more insights into changes in consumer perception over this period.

Some constructs, although found to be nonsignificant in this study, such as risk and trust, have to be retested. The antecedents of these constructs on consumers online PI must be analysed to shed light on which variables are critical. In addition, the risk construct should be retested by including more variables to gain a deeper understanding of its impact on consumer online retail PI.

In addition, further longitudinal studies covering different stages of the pandemic are warranted to gain a deeper understanding of the constructs perceived to drive consumer PI. Considering there may be numerous waves of the pandemic or other similar situational factors that impact society in the future, further studies on this topic should be conducted. Similarly, studies are warranted during different levels of the lockdown and also when a vaccine is released and administered across the country.

The Covid-19 situation is evolving, and 4IR technologies are dominating and playing a major role in the lives of consumers. Therefore, it is important that businesses stay on top of consumers' perceptions and meet their needs. Online retail is a critical component for any business, and emphasis must be placed on understanding the present consumer perceptions and changes over time.

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APPENDIX A – Hypotheses

Table A Hypotheses to be measured

Hypothesis	Measure	Constructs
H1	***Risk is negatively associated with consumer purchase intention (PI)***	Risk
H2	***Trust is positively associated with consumer PI***	Trust
H3	***Trust is negatively associated with consumer perceived risk***	Trust, Risk
H4	***PU is positively associated with consumer PI***	PU
H5	***Trust is positively associated with consumer PU***	Trust, PU
H6	***PEOU is positively associated with PI***	PEOU
H7	***Trust is positively associated with consumer PEOU***	Trust, PEOU
H8	***PEOU is positively associated with consumer PU***	PEOU, PU
H9	***PV is positively associated with PI***	Price Value

Hypothesis	Measure	Constructs
H10	***FC is positively associated with consumer PI***	Facilitating Conditions
H11	***Covid-19 is positively associated with consumer PI***	Covid-19
H12	***Perceptions of the Covid-19 impact act as a moderator such that the relationship between trust and PI is stronger when the effect of the situational factor is higher***	Covid-19, Trust
H13	***Perceptions of the Covid-19 impact act as a moderator such that the relationship between PU and PI is stronger when the effect of the situational factor is higher***	Covid-19, PU
H14	***Perceptions of the Covid-19 impact act as a moderator such that the relationship between PEOU and PI is stronger when the effect of the situational factor is higher***	Covid-19, PEOU
H15	***Perceptions of the Covid-19 impact act as a moderator such that the relationship between PV***	Covid-19, PV

Hypothesis	Measure	Constructs
	and PI is stronger when the effect of the situational factor is higher	
H16	***Perceptions of the Covid-19 impact act as a moderator such that the relationship between FC and PI is stronger when the effect of the situational factor is higher***	Covid-19, FC
H17	***Perceptions of the COVID-19 impact act as a moderator such that the relationship between risk and PI is weaker when the effect of the situational factor is higher***	Covid-19, Risk

APPENDIX B – Research Instrument

Table B Research Instrument Survey

Construct	Questions/Statements	Measurement	Source
Trust	TR1 Promises made by online retailers are likely to be reliable. TR2 I do not doubt the honesty of online retailers. TR3 I expect that online retailers will keep the promises they make. TR4 I expect that online retailers have good intentions toward me. TR5 I expect that the intentions of online retailers are benevolent. TR6 I expect that online retailers are well meaning. TR7 I expect that online retailers are competent.	Disagree - Agree 7 Point Likert Scale	(Glover & Benbasat, 2010)
Risk	RS1 Purchasing online would involve more product risk. (i.e. not working, defective product) when compared	Disagree - Agree 7 Point Likert Scale	(Kim et al., 2008)

Construct	Questions/Statements	Measurement	Source
	with more traditional ways of shopping. RS2 Purchasing online would involve more financial risk. (i.e. fraud, hard to return, no or late delivery) when compared with more traditional ways of shopping. RS3 How would you rate your overall perception of risk from online retail sites?		
Perceived Usefulness	PU1 Buying online improves my ability to make good purchase decisions. PU2 Buying online allows me to get my shopping done more quickly. PU3 Buying online allows me to enhance my purchasing effectiveness. PU4 When I buy online, my performance (i.e. product variety, speed, convenience, etc.) in purchasing is improved.	Disagree - Agree 7 Point Likert Scale	(Glover & Benbasat, 2010)

Construct	Questions/Statements	Measurement	Source
Perceived Ease of Use	PEOU1 Buying online is easy to do. PEOU2 It is easy to become skillful at buying online. PEOU3 Learning to buy online is easy. PEOU4 Buying online is clear and understandable. PEOU5 When I buy online, it is easy to do what I want to do.	Disagree - Agree 7 Point Likert Scale	(Glover & Benbasat, 2010)
Price Value	PV1 Online retail is reasonably priced. PV2 Online retail offers value for money. PV3 Online retail prices compare to physical retail.	Disagree - Agree 7 Point Likert Scale	(Venkatesh et al., 2012)
Facilitating Conditions	FC1 I have the necessary resources to shop online. FC2 I have the necessary knowledge to shop online.	Disagree - Agree 7 Point Likert Scale	(Venkatesh et al., 2012)

Construct	Questions/Statements	Measurement	Source
	FC3 I can get assistance when I have difficulties shopping online.		
Covid-19 Impact	CV1 Covid-19 has changed my lifestyle habits. CV2 Covid-19 has changed my perception of online retail positively. CV3 I will purchase less from physical stores in the next 18 to 24 months due to Covid-19. CV4 Covid-19 is resulting in me reducing my physical interactions. CV5 I am concerned about going to physical stores because of Covid-19. CV6 Covid-19 has resulted in me travelling less to physical stores.	Disagree - Agree 7 Point Likert Scale	Author's Own Source
PI	PI1 I intend to buy online. PI2 I predict I will buy online. PI3 I plan to buy online.	Disagree - Agree 7 Point Likert Scale Categorical: Within 1 month; 1 to 3	(Glover & Benbasat, 2010)

Construct	Questions/Statements	Measurement	Source
	PI4 When do you intend to buy online next?	months; 3 to 6 months; 6 to 12 months; not within 12 months	

APPENDIX C – Copy of Ethics Clearance Certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

SCHOOL OF GRADUATE SCHOOL OF BUSINESS ADMINISTRATION ETHICS COMMITTEE
CONSTITUTED UNDER THE UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: WBS/BA0203337k/737**
PROJECT TITLE	The significance of key constructs on consumers purchase intention in online retail in a Covid-19 climate
INVESTIGATOR	Mr Eden Pillay
SCHOOL/DEPARTMENT OF INVESTIGATOR	MM (Digital Business)
DATE CONSIDERED	20 July 2020
DECISION OF THE COMMITTEE	Approved unconditionally
RISK LEVEL	MINIMAL RISK
EXPIRY DATE	30 JUNE 2021

ISSUE DATE OF CERTIFICATE 4 August 2020

CHAIRPERSON _____
(Dr MDJ Matshabaphala)

cc: Supervisor: Dr Mayayise

DECLARATION OF INVESTIGATOR

To be completed in duplicate and **ONE COPY** returned to the Chairperson of the School/Department ethics committee.

I fully understand the conditions under which I am are authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee.

_____ 04 /08 /2020
Signature **Date**

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES