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The barriers to Adoption of a Cashless Economy in South African Informal Markets: consumers' perspective

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A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business

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ABSTRACT

This study aims to enhance the Unified Theory of Adoption and Use of Technology (UTAUT2) by integrating security and privacy concerns associated with cashless payments (CLP). The research investigates impediments to adopting cashless payments in the informal sector among South African consumers. Data was collected through an online survey administered to South African informal sector customers using a quantitative approach. Four hundred and seventeen participants contributed, yielding three hundred and twenty-five usable responses for testing the research hypotheses. Structural Equation Modelling (SEM) via Analysis of Moment Structures (AMOS) was applied for data analysis.

The findings reveal that Perceived Trust (PT) and Perceived Risk (PR) exert the most significant influence on the adoption of cashless payments. Social Influence (SI) also demonstrates a statistically significant impact on this adoption. Conversely, Performance Expectancy (PE), Effort Expectancy (EE), Price Value (PV), and Habit (Ht) exhibit statistically insignificant associations with this adoption.

To create a more comprehensive model for determining cashless payment adoption in the informal sector, the researchers modified UTAUT2 by incorporating consumers' perceived trust and risk. Notably, there is limited research on adopting cashless payments within the context of the informal sector. The research findings hold implications for policymakers, banks, and fintech companies, offering insights into the factors contributing to the sluggish adoption of CLPs in the informal sector. This understanding can guide the design of appropriate solutions to address consumer concerns regarding using CLPs in the informal sector, facilitating a successful transition towards a cashless economy.

Keywords: Cashless payments, Digital payments, UTAUT2, Informal sector

DECLARATION

I, Lutendo Nndwakhulu Gandamipfa, declare that this research report is solely my creation, with any external contributions duly credited in the references and acknowledgements. This submission represents a partial fulfilment of the criteria for attaining the Master of Management degree in Digital Business from the University of the Witwatersrand, Johannesburg. Furthermore, it has not been presented for assessment or qualification in any other academic institution, either presently or previously.

Name: Lutendo Nndwakhulu Gandamipfa Signature:

Signed at ……..

On the …….. day of …… 20……

DEDICATION

This research report is dedicated to my loving family, whose continuous support, sacrifices, and encouragement over the last two years have been critical to my academic journey. I am eternally grateful for your support and the sacrificed time we could not spend together due to my commitments.

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LIST OF ACRONYMS

BIU - Behavioural intention to use.

CLP – Cashless Payments

CLT – Cashless Transactions

EE - Effort Expectancy

eWallet - Electronic Wallet

Ht - Habit

PE - Performance Expectancy

POS - Point of Sale

PR – Perceived Risk

PT - Perceived Trust

PV – Price Value

SA - South Africa

CHAPTER 1. INTRODUCTION

1.1 Statement of purpose

This research sought to determine the impediments hindering the adoption of cashless payment systems within the informal sector in South Africa. To this end, an extended UTAUT2 model was employed, incorporating perceived risk and trust factors. The UTAUT2 framework examines the factors influencing consumers' behavioural intention to adopt cashless payment technologies.

1.2 Background of the study

Physical cash dates back to merchants and consumers trading with metals in exchange for goods and services (Gorshkov, 2022). Coin and paper cash emerged as trusted fiat currencies, dominating the global economy (Demirgüç-Kunt et al., 2022; FIS, 2023). The world has rapidly transitioned towards cashless payments in recent years, fuelled by technological advancements, changing consumer behaviour, and government policies (Demirgüç-Kunt et al., 2022; FIS, 2023). The use of cash in European countries, i.e., Norway and Sweden, declined to less than 10% in recent years (FIS, 2023).

South Africa's shift towards a cashless economy has been slow but steady. Gorshkov (2022) rates South Africa's adoption of cashless payments ahead of Russia. While cash remains the dominant payment method, electronic payment solutions such as mobile money, online banking, and card payments are gaining popularity among consumers and businesses (FIS, 2023). In recent years, since 2018, the South African government has made efforts to promote the adoption of cashless payment methods; the South African Reserve Bank launched a national payment system strategy (South African Government, 2018), which aims to

modernise the country's payment infrastructure and promote the adoption of electronic payment methods by 2025 (SARB, n.d.).

Despite these efforts, the adoption of cashless payment methods in South Africa has been slower than in many other countries. Many South Africans still rely on cash for day-to-day transactions, with physical money estimated to account for 35% of all transactions in the country (Demirgüç-Kunt et al., 2022; FIS, 2023). The SARB Vision 2025 also accept this reality and makes room to financially include the consumers with cash habits by ensuring an efficient cash-in and cash-out system to make cash readily available for consumers who prefer using money (SARB, n.d.). This view is different from other countries, i.e., India and Nigeria, which are aggressively driving the adoption of a cashless economy by defining regulations that limit cash withdrawals and usage in their economy (CBN, 2011; Doshi, 2016).

The Case of the South African Informal Economy

This paper adopts the definition of the Informal Economy provided by Schneider (2005). According to this definition, the informal economy, also known as the shadow economy, hidden economy, cash economy, etc., is characterised by legal, economic activities that are concealed from official authorities for various reasons, such as tax evasion, avoidance of regulatory compliance, and circumvention of other bureaucratic processes established by policymakers. The crucial aspect to note in our definition is that business income must be generated from legal activities. For instance, a street vendor selling fruits and vegetables by the traffic lights, a food vendor on the streets, or a spaza shop selling goods. These merchants would usually not declare their revenue to the South African Revenue Service (SARS), making them part of the informal economy according to Schneider (2005) informal economy definition.

The informal market, which includes street vendors, spaza shops, micro-scale flea market traders, and other self-employed individuals, plays a significant role

in SA’s economy. According to Statistics South Africa, the informal sector in South Africa employs approximately three million people, accounting for around 19% of the country's total employment (StatsSA, 2023). However, the informal sector often faces financial inclusion challenges; literature reports that some available digital payment solutions are suitable for the informal sector based on cost, usability, and convenience (ATKearney & Visa, 2021; Central Bank of Kenya, 2023).

Both parties’ preferences and considerations drive the choice of payment methods between consumers and merchants. Consumers may choose a payment method based on personal preferences, convenience, and security (Bruno & Faggini, 2022; Raj et al., 2023). For example, some customers may prefer credit cards because they offer rewards and fraud protection, while others may prefer mobile payment apps because they are secure and easy to use (FIS, 2023). Existing studies have focused mainly on adopting electronic payment methods within the formal sector, with little attention paid to the challenges and opportunities of adopting cashless payment methods in the South African informal markets. This study aims to contribute to understanding the impact of cashless payment adoption from the consumers' perception in informal markets.

1.3 Research Problem

The South African financial sector is mature, with rising banking and digital payment solutions (SARB, n.d.). In recent years, there has been an increase in digital payments, such as mobile money, cash transfers, QR code payments, and tap-and-go payments, which have been implemented and adopted in SA (SARB, n.d.). However, with all these solutions, around 35% of in-store POS transactions in the market are still cash payments; this makes Cash the second most preferred method of payment in South African society, just behind Debit Card payments at 38% (Demirgüç-Kunt et al., 2022; FIS, 2023). According to Ehrlich and Elliott

(2019), Point of Sale (POS) cash payments in informal markets should be higher as that sector has a higher cash dependency.

A cash-dependent economy has many disadvantages; its anonymity makes it a preferred mode of funding illegal activities, including corruption, money laundering, tax evasion, etc. (Mckinsey, 2022). Digital payment technologies allow South Africa to curb crime and increase financial inclusion further. Therefore, the problem that this study seeks to explore is the barriers that are inhibiting a fast adoption of digital payments or, broadly, cashless payments.

Dimitrova et al. (2022) have highlighted that consumers' perceived trust, risk, security, and cost can be barriers to adopting digital payments. Their study focused on the influence of these barriers on the intention of bank customers in Sweden to embrace digital payments fully, providing valuable empirical insights. Similar findings have been reported by Raj et al. (2023), Neto and de Figueiredo (2022), and Widyanto et al. (2022). On a domestic level, Ikdal (2017) conducted a study on digital financial inclusion in South Africa, revealing that 33% of respondents cited "fear of fraud" as the primary reason for their reluctance to use mobile banking. This research sought to contribute empirical evidence on the effect of various obstacles on consumers' intention in the informal market to adopt cashless payment methods by building upon the previously mentioned problems and scholarly investigations in this field.

1.4 Research Objectives

The following research objectives were assessed in the study:

i. Assess factors influencing consumers' behavioural intention to adopt cashless payments in informal markets,
ii. Evaluate the impact of security and privacy constructs (perceived trust and perceived risk) and cost as barriers to consumers' behavioural intention to

use cashless payments for purchasing goods and services in the informal market and

iii. Determine whether barriers (Perceived Risk, Perceived Trust, and Price Value) or drivers (Performance Expectancy, Effort Expectancy, Social Influence, and Habit) exert a more significant influence on the behavioural intention to adopt cashless payments.

1.5 Rationale

Informal markets play a significant role in the South African Economy; they provide income and employment opportunities to millions of people residing in South Africa (StatsSA, 2023). Like other government bodies across the world, the South African government is promoting the adoption of a cashless economy (a significant reduction of cash usage in the economy) (SARB, n.d.). This is evident in the recent implementation of PayShap by the South African banking community to reduce society's dependency on cash (PayShap, n.d.). It can be assumed that it will not be long before the Reserve Bank implements the cash limit regulations like many countries worldwide, e.g., Nigeria and India (CBN, 2011; Doshi, 2016).

This study's findings sought to provide valuable insights into the challenges faced by informal markets in embracing cashless transactions, which can inform policymaking and promote financial inclusion in South Africa. It aims to make a meaningful contribution to the existing body of knowledge on using cashless payments as an alternative mode of payment to cash. According to a study conducted by Mastercard, there is a willingness among customers to embrace cashless payment methods, while merchants in the informal sector are slow to adopt these alternatives. This conclusion attributes the slow adoption solely to the merchants' failure to provide cashless payment options during transactions (Elliott, 2018). However, Ikdal (2017) findings challenge this viewpoint by identifying "fear of fraud" as the primary reason why some individuals in South Africa are not adopting mobile banking.

In support of Ikdal's findings, this research posited that consumers' intention to utilise cashless transactions in informal markets is hindered by the perceived risks and lack of trust associated with using technology in the informal sector. The findings of this study offer valuable insights to financial service providers, fintech companies, and the South African government, enabling them to facilitate the swift adoption of cashless payments and advance towards a cashless economy. Furthermore, the study aimed to identify the crucial extended UTAUT2 factors that solution developers and marketers should consider when creating or promoting cashless solutions for the informal sector. These insights will contribute to implementing effective strategies and solutions that can accelerate the adoption of digital payments and promote the growth of cashless transactions in South Africa.

1.6 Delimitations of the study

This study examined the uptake of cashless payment methods within the informal sector, particularly among street vendors, hawkers, and spaza shops. It did not investigate formal sector retailers such as Woolworths, Shoprite, Pick ‘n Pay, and Spar. Additionally, it solely focused on consumers' attitudes and behaviours towards cashless payment adoption, neglecting the perspectives of the merchants (informal traders). Lastly, the study was conducted solely through an online platform, thereby excluding individuals without internet access from participation.

1.7 Definition of terms

i. **Cash** is physical money, such as banknotes and coins, used to make transactions in exchange for goods and services (ECB, n.d.).
ii. **A Cashless Economy** is an economic system where most payment transactions are conducted electronically or digitally without using physical

money. In a cashless economy, society relies less on cash and more on electronic payment systems such as credit cards, debit cards, mobile payment apps, and online payment platforms to make transactions (Raj L et al., 2021). This term is used interchangeably with **Cashless Society** in this paper.

iii. **Digital Payments** refer to payment instructions administered through the Internet or other telecommunication networks. These payments can be initiated through various devices, such as computers, mobile phones, POS devices, or any other electronic gadget. Some examples are electronic or digital wallets, credit cards, debit cards, mobile money, virtual bank cards, etc. (WorldBank & IFC, 2022). This paper uses digital payment interchangeably with **Cashless Transactions, Cashless Payments and Digital Transactions**.

iv. **Mobile payments**: These involve using a mobile device to make payments, either through a mobile payment app or another mobile technology solution (ECB, n.d.; WorldBank & IFC, 2022).

v. **Digital wallets**: These digital platforms allow users to store their payment information and make payments using electronic payment instruments. A digital wallet can be used to make payments or to transfer money (ECB, n.d.).

vi. **Mobile money**: Mobile money refers to an electronic money service that keeps track of funds on a mobile phone, tablet, or computer. The funds can be accessed by following specific payment instructions from the user's mobile phone (WorldBank & IFC, 2022).

vii. **Money:** Money is a widely accepted medium of exchange used to facilitate buying, selling, and trading goods and services. It can take various forms, including physical objects such as coins, banknotes, and digital representations stored in bank accounts or electronic wallets. It serves as a unit of value, a medium of exchange, and a store of wealth, allowing

individuals to measure the worth of goods and services, conduct transactions, and save for future use (ECB, n.d.).

viii. **Informal markets**: This study is limited to street vendors and street hawkers.

ix. **Trade** refers to exchanging goods and services between merchants and consumers. The act of trading involves the transfer of ownership of goods or services from merchants to consumers in exchange for money.

x. **A merchant** is a person or business entity that sells goods or services to consumers.

1.8 Assumptions

i. Consumers are aware that merchants can offer alternative cashless payment methods.
ii. All street vendors and street hawkers form part of the informal sector in South Africa.
iii. Gender and work experience do not significantly influence the adoption of cashless payments in the informal markets.

1.9 Report Outline

This chapter introduced the purpose and problem of the study, which aims to evaluate the barriers hindering consumers from adopting cashless payments in the informal sector. The study contends that the South African economy and society are witnessing a sluggish adoption rate of cashless payments, particularly in the informal sector. Three objectives were defined:

i. Assess factors significantly influencing consumers' behavioural intention to adopt cashless payments in informal markets,
ii. evaluate the impact of security and privacy constructs (perceived trust and perceived risk) and cost as barriers to consumers' behavioural intention to use cashless payments for purchasing goods and services in the informal market and
iii. determine whether barriers (Perceived Risk, Perceived Trust, and Price Value) or drivers (Performance Expectancy, Effort Expectancy, Social Influence, and Habit) significantly influence the behavioural intention to adopt cashless payments.

The chapter further outlined the assumptions and delimitations guiding the study.

Chapter 2 concentrated on a comprehensive literature review, offering insights into the state of cashless payments globally and specifically in diverse regions.

The chapter delved into the adoption of cashless payments within the informal sector and introduced the research's theoretical framework, expanding upon and adopting UTAUT2 as the primary model. Within this theoretical framework, the study proposed seven hypotheses for subsequent testing.

Chapter 3 detailed the research methodology, encompassing the positivist research paradigm, research approach, survey research strategy, and an outline of the data collection methods employed.

Chapter 4 delved into analysing data findings, covering demographic information about the research participants, presenting model fit results, and reporting on the outcomes of the hypotheses.

Chapter 5 extensively discusses the research results, while **Chapter 6** comprehensively summarises the study's outcomes. This chapter also reflects on the research objectives, discusses the theoretical and practical implications of the findings, and offers recommendations for future considerations.

CHAPTER 2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

This chapter provides a background on the literature that has contributed to the body of knowledge regarding cashless payments and introduces the UTAUT2 theoretical framework. Initially, the chapter reviews the global state of adopting cashless payments, highlighting persistent cash dependencies in various countries and presenting outstanding case studies of success in adopting cashless payments in other countries. Subsequently, the study introduces the Unified Theory of Acceptance and Use of Technology (UTAUT2) and then proposes the research hypotheses. Lastly, the study presents the research model employed.

2.1.1 *Literature search parameters and academic databases*

The literature cited in this study was systematically accessed from the following electronic libraries: Scopus, Science Direct, Emerald, SABINET Africa, and Google Scholar. The keywords used were cashless economy / cashless society, digital payments, mobile money, e-wallet, and the adoption of digital payments in South Africa. Use the following KEYWORD (“cashless”) OR ("cash Payment") OR ("Digital Payment") OR ("wallet payment") OR ("mobile payment") OR ("mobile money") OR ("electronic payment") OR ("m payment") AND ("adopt") In addition the search included the following Theoretical Frameworks UTAUT, UTAUT2 and Theory of Perceived Risk.

2.2 The Adoption of Cashless Payments

According to a report by FIS (2023), the global adoption rate of digital payments (DP) is on the rise, driven by factors such as perceived usefulness, perceived ease of use, convenience, social influence and trust (Raj et al., 2023). However, cash continues to play a significant role in society, with consumers spending $7.6 trillion in cash transactions in 2022 (FIS, 2023). The FIS (2023) report also highlights that digital wallets are the most widely used and fastest-growing form of digital payment, accounting for a 32% share of global POS payments.

Adopting cashless payments (CLP) varies significantly across countries and regions. In countries like Sweden and Norway, cashless transactions (CLT) are widely accepted and have become the norm, with cash payments accounting for only 8% and 3% respectively (FIS, 2023). On the other hand, the Middle East and Africa (MEA) region has been slower in adopting cashless payments, with cash still representing 62% of payments in 2022. This indicates a significant gap in the adoption of cashless payments in the MEA region. While South Africa has a relatively higher adoption rate at 35% cash payments compared to other countries in the MEA region, it still lags behind European countries like Norway and Sweden (FIS, 2023).

While some countries have implemented monetary policies to promote the shift towards a cashless economy, research suggests that more than policy is needed to transition a country to a cashless society successfully (Mieseigha & Ogbodo, 2013; Ugwoke et al., 2019). Other factors related to technology adoption must also be taken into consideration to influence the adoption of cashless payments (Al-Saedi et al., 2020; Raj et al., 2023; Venkatesh et al., 2003; Venkatesh et al., 2012; Widyanto et al., 2022).

The report will cover in detail the adoption of cashless payments in different regions (Europe, Africa, the Middle East, Asia, North America, South America, and Oceania) across the globe in the following sections of this chapter.

2.2.1 *Europe CLP adoption*

Europe has been at the forefront of embracing cashless payment technologies, with the roots of this evolution traced back to the late 20th-century introduction of credit cards and electronic funds transfer (FIS, 2023). The subsequent emergence of cashless payments has brought a transformative shift in payment behaviours across various European countries (FIS, 2023).

As indicated by FIS (2023), the use of cash in Europe is experiencing a rapid decline, evidenced by the regional share of POS transaction value decreasing from 40% in 2019 to 22% in 2022. European consumers are increasingly transitioning from cash to cashless payments. This trend has been accelerated by the COVID-19 pandemic, particularly fostering significant growth in contactless payments at POS through digital wallets and contactless cards. Notably, there are considerable variations in the share of cash in POS value across Europe, with the Nordics (Denmark, Finland, Iceland, Norway, and Sweden) exhibiting the lowest cash usage. At the same time, Spain, Germany, Poland, and Turkey still maintain significant shares of cash transactions (FIS, 2023).

Sweden

In Sweden, the trend towards cashless transactions persists as the preferred mode of payment, surpassing the use of cash (FIS, 2023). Swedish consumers prefer card-based transactions, with debit cards dominating the in-store POS transaction value at 52% in 2022 and credit cards contributing an additional 20%. Meanwhile, cash transactions remained at a steady 8% of POS spending in 2022, positioning Sweden among the nations with the lowest reliance on cash globally (FIS, 2023). In response to this shift, Sweden's central bank (Riksbank) is actively modernising its systems and exploring the feasibility of introducing a Central Bank Digital Currency (e-krona) (Dimitrova et al., 2022; RIKSBANK, 2022).

Estonia

Estonia emerges as a technologically advanced market in payment methods, where contactless cards and digital alternatives command a prominent position, with people who are more digitally savvy leveraging platforms such as Apple Pay and Google Pay through their smartphones or smartwatches (Kantar Public, 2022).

A European Central Bank (ECB) study indicated that contactless debit cards emerged as the favoured choice for routine shopping among the Estonian general populace (Kantar Public, 2022). Adopting digital solutions such as Apple Pay and the local app mTasku was observed among individuals aged 18 to 64. The participants of the study by ECB indicated that their preference for cashless payment methods stemmed from a desire for convenience and ease of use (Kantar Public, 2022). This is consistent with the UTAUT theoretical framework, which indicates that perceived efficiency and ease of use are constructs that significantly influence consumers' intention to use technology (Venkatesh et al., 2003; Venkatesh et al., 2012).

In Estonia, cash-based payments are relegated only to situations where cashless or digital payment options are absent, resulting in a significantly lower prevalence of cash usage compared to many other countries within the euro area (Kantar Public, 2022; Laidroo et al., 2023).

Finland

Finland has positioned itself as a pioneer in mobile payment innovations. The inclination of Finnish consumers towards cashless payment methods at POS has been resounding, constituting a significant 90% of the POS transaction value in 2022, as reported by FIS (2023). The advent of mobile payment applications, exemplified by Pivo and MobilePay, has witnessed widespread acceptance among Finnish consumers, as highlighted in the ECB 2022 report (Kantar Public, 2022). These applications offer a spectrum of functionalities, encompassing peer-

to-peer transfers, in-store payments, and bill settlements, thereby establishing a comprehensive user payment ecosystem (Kantar Public, 2022).

Like many other Nordic European nations, cash is mainly used in Finland when other payment options are not available, such as at flea markets (Kantar Public, 2022). This observation corresponds with the aim of the current research, which examines the sluggish adoption of CLP in the South African informal markets. Despite Finland and Estonia having higher CLP adoption rates, they still exhibit a minor reliance on cash within their informal markets. However, the distinction lies in the relatively modest contribution of informal markets to the Nordic countries' economies (Kantar Public, 2022).

2.2.2 *North American CLP Adoption*

The payment landscape in North America has undergone a notable transformation, shifting from conventional cash-centric transactions to a widespread acceptance of digital payment solutions. In POS transactions, cash's role has diminished, comprising only 12% of the total value of payments in 2022. Canada stands out as a leader in the North American region for its embrace of cashless payments, as evidenced by cash contributing merely 6% to POS transactions in 2022 (FIS, 2023).

The United States of America (USA)

According to the investigation conducted by the Federal Reserve (2023), the value of cashless payments in the USA witnessed an unprecedented acceleration from 2018 to 2021, surpassing any annual growth rates recorded since 2000. With a remarkable yearly increase of 9.5% during this period, the aggregate value of cashless payments reached $128.51 trillion in 2021 (Federal Reserve, 2023).

These findings are consistent with those of FIS (2023), whose study found that USA consumers demonstrated a notable affinity for card-based transactions, constituting over 70% of the POS transaction value in 2022. Credit cards emerged as the predominant payment method at POS, capturing 40% of the transaction value in 2022, followed by debit cards at 31%, digital wallets at 12%, and cash at 12%, as reported by FIS (2023).

Canada

In the aftermath of the Covid-19 pandemic, there has been a substantial surge in the adoption of cashless payment methods among Canadians. A notable shift has occurred, with more than one-third of Canadians expressing comfort in utilising smartphones and smartwatches, tap-to-pay, QR code payments, and card tap-and-go methods (Yun, 2023). Remarkably, a significantly higher proportion of older Canadians have embraced digital payments, constituting 94% of the total transaction value in 2022. This encompassed contactless cards and mobile wallets for making purchases, as documented in research by Yun (2023) and supported by the FIS (2023) report. Credit and debit cards retained their dominance in transaction volume, representing 50% and 30%, respectively (FIS, 2023).

2.2.3 *South America*

South America has witnessed a significant evolution in payment methodologies, with a substantial decline in the share of cash in POS transaction value since 2018, decreasing from a 58% share to 31% in 2022. Notably, 31% is still more than double North America's 12% cash dependency (FIS, 2023). Conversely, the uptake of digital payments in Mexico has been slower. The primary CLP system in the country, CoDi, has faced challenges associated with low adoption rates among merchants and consumers. This phenomenon can be attributed, in part, to the prerequisite of having a bank account for CoDi usage, a factor exacerbated by the significant underbanked population in Mexico (FIS, 2023).

Brazil

In November 2020, the Central Bank of Brazil (BCB) introduced Pix, an electronic payment ecosystem. The primary objectives of this initiative were to diminish reliance on cash transactions, enhance financial inclusion, foster competition within a concentrated banking system, and modernise the payment infrastructure to facilitate faster and more secure transactions (International Monetary Fund, 2023).

The Pix system has significantly surpassed initial usage expectations, playing a pivotal role in advancing financial inclusion. As of May 2023, within the two and a half years since its launch, Pix has garnered participation from over 140 million individuals, approximately 80% of the adult population (International Monetary Fund, 2023). According to the IMF report, Pix has contributed to financial inclusion in recent years by enabling transactions for 71.5 million individuals who had never previously used CLP (International Monetary Fund, 2023). Pix has emerged as a robust system, with payment volumes nearly five times greater than debit and credit card volumes. In a global context, including advanced economies, Brazil stands out for achieving the fastest adoption rate in terms of transactions per capita since the implementation of Pix (International Monetary Fund, 2023).

Argentina

Like many other developing countries, the Argentine economy faces a challenge in transitioning towards a cashless economy. The transformation requires substantial changes across various dimensions, encompassing the historically low levels of banking account adoption, the dominance of the informal economy, and the pervasive issue of tax evasion (Elosegui, 2020). In support of Elosegui (2020), FIS (2023) reported that in 2022, POS transactions in Argentina were predominantly facilitated through cash, constituting 28% of usage, followed by debit cards at 27% and credit cards at 25%.

In 2021, the World Bank found that 92% of Argentines aged 15 and older possessed a mobile phone. However, using mobile phones or the internet to access financial institution accounts was reported at 9.8% in 2017 and increased to 17% in 2022 (FIS, 2023). The situation regarding the adoption of cashless transactions in Argentina and other South American nations resembles that of South Africa, which is significantly impacted by the economic presence of their informal sector.

2.2.4 *Asia-Oceania CLP adoption*

In recent years, digital wallet adoption worldwide has significantly trailed behind that of China, the global leader in this domain (Klein, 2020). In 2022, China witnessed digital wallets contributing 81% of e-commerce expenditures and 56% of POS transactions. Additionally, there has been a notable shift in the Asia-Oceania region, where digital wallet usage has experienced substantial growth; over the past five years, the proportion of POS payment transactions attributed to digital wallets witnessed a sixfold increase between 2018 and 2022, as reported by (FIS, 2023).

Prominent global digital wallet entities, such as “Alipay, WeChat Pay, Paytm, Apple Pay, and PayPal”, exhibit widespread engagement across the Asia-Oceania region. Despite their global prominence (Alipay, WeChat Pay, Paytm, Apple Pay, and PayPal), specific Asia-Oceania countries are characterised by the dominance of local digital wallets, for example, GrabPay in Singapore, MoMo in Vietnam, GoPay in Indonesia, and GCash in the Philippines (FIS, 2023).

China

China is one of the countries at the forefront of the quest to establish a cashless economy and society, with cash estimated to contribute only 15% of the total value of POS transactions in 2022 (FIS, 2023). They are the global leaders in digital payment adoption; their mobile payment ecosystem, primarily led by Alipay

and WeChat Pay, has witnessed unparalleled growth (Klein, 2020). These mobile payment platforms offer various services, including peer-to-peer transfers, in-store payments, utility bill payments, and online shopping (FIS, 2023). The convenience, integration with everyday activities, and an extensive network of merchants have led to widespread adoption among Chinese consumers, significantly reducing the reliance on cash transactions (FIS, 2023; Klein, 2020). The unique characteristics defining the roles of Alibaba and Tencent in China underscore the impracticality of replicating their model elsewhere. These companies have been intricately intertwined with the state since their inception. They operate as an oligopoly alongside a limited number of other enterprises within the expansive Chinese territory, home to approximately 1.4 billion people (Torre & Xu, 2021).

Despite the unique characteristics of the leading fintech companies in China and their relationship with the government, the Chinese digital payment adoption use case should set an example for developing countries with high financial exclusion and a significant informal sector. China’s cashless payment ecosystem is dominated by digital wallets, mobile money, and QR code transactions (FIS, 2023; Klein, 2020); these cashless payments are suitable for informal markets (Central Bank of Kenya, 2023).

Despite the distinctive features of China's top fintech firms and their ties to the government, adopting digital payments in China presents a compelling model for developing nations facing substantial financial exclusion and a sizable informal economy. China's widespread use of digital wallets, mobile money, and QR code transactions in its cashless payment landscape, as highlighted by Klein (2020) and FIS (2023), demonstrates a viable approach for developing countries and their informal markets, as witnessed in the success of M-PESA (Central Bank of Kenya, 2023). Therefore, South African policymakers and financial service providers must consider China’s approach to a cashless economy.

India

In 2016, the Prime Minister of India declared the demonetisation of 500 and 1,000 rupee notes, representing a staggering majority of the circulating cash (Doshi, 2016). The economic landscape of India underwent a substantial transformation due to the demonetisation policy, significantly influencing the trajectory of digital payments within the country. Before 2019, cash constituted 72% of the overall transaction volume in India (FIS, 2023); these findings were consistent with the study by Shree et al. (2021), which indicates that the use of cash increased during this period. Shree et al. (2021) attributed the increase in the use of cash in India to the consumers' lack of trust in cashless payments and fear of increasing instances of digital fraud. However, contrary to Shree et al. (2021) finding, in 2022, six years post demonetisation, cash only constituted 27% of POS value (FIS, 2023) in India, signifying a drastic decrease in the use of cash nationally. The demonetisation of 500 and 1,000 rupee notes by the Indian government's strategic move has proven to be a great success in fostering the adoption of digital payments in India (FIS, 2023).

Additionally, the introduction of the Unified Payments Interface (UPI) has played a pivotal role since its inception in 2016 by the National Payments Corporation of India (NPCI). By the close of the calendar year 2023, UPI has demonstrated remarkable growth, with 75% of retail cashless payment transactions attributed to it (PWC, 2023).

Australia

Digital wallets in Australia continue their upward trajectory, driven by key players such as Apple Pay, Google Wallet, and PayPal (FIS, 2023). The Australian Banking Association (ABA) released a report in 2021 that underscored the rapid expansion of the country's digital economy, particularly in mobile wallet transactions. The report highlighted a striking surge, with an overwhelming 98.9% of banking interactions occurring digitally (Australia Banking Association, 2021).

The use of cash in Australia has significantly reduced from 70% in 2007 to 13% in 2021, with cashless payment methods being preferred by customers for POS transactions (Australia Banking Association, 2021). This trend aligns with the 2023 World Pay report, which indicates that cash payments constituted only 6% of the total value in 2022, signifying that cashless payments now dominate at 94% in Australia (FIS, 2023). Australia is a compelling illustration of the rapid adoption of cashless payments within a short span. It exemplifies how collaboration between the central bank, retail banks, and other service providers can expedite digital transformation within a relatively short period (Australia Banking Association, 2021; FIS, 2023; Reserve Bank of Australia, 2023).

2.2.5 *Middle East and Africa CLP Adoption*

In the Middle East and Africa (MEA) region, the proportion of cash used for POS transactions is declining rapidly (FIS, 2023). According to FIS (2023) cash shares dropped from 73% in 2018 to 43% in 2022. FIS Worldpay also projects that by 2026, cash will only make up 29% of POS transactions in the MEA region (FIS, 2023). This significant decline can be attributed to the dedicated efforts of various countries in the region to undergo digital payment transformation.

However, a 43% cash dependency is still high compared to other regions. A literature review performed (Alkhowaiter, 2020) in 46 Gulf countries in the Middle East, digital payment users' perceived trust and security were among the highest predictors of adoption in this region. This finding in the part of the MEA region aligns with the objective of this current study, which proposes that perceived trust and perceived risk could be the most significant predictors of digital payment adoption in South Africa within the informal sector setup. On the other hand, the United Arab Emirates (UAE) is making positive strides in its digital payment journeys. According to FIS (2023)In 2022, cash represented only 18% of the POS transaction value in the UAE.

United Arab Emirates

The UAE has taken proactive measures to promote the widespread use of digital payments. Strategic initiatives, including the UAE Vision 2021 and the introduction of government-backed digital wallets, have played a pivotal role in fostering the adoption of digital payment solutions. Notably, in 2022, cashless payments constituted a substantial 82% of the value of POS transactions (FIS, 2023). Consumers in the UAE enjoy a diverse array of choices among some of the world's leading wallet brands, including Alipay, Apple Pay, Google Wallet, Samsung Wallet, and WeChat Pay. Furthermore, they can access domestic wallet options such as Careem Pay, e& money (Etisalat Wallet), and Payit (FIS, 2023).

Saudi Arabia

Despite being characterised as a cash-intensive economy, Saudi Arabia is rapidly transitioning away from cash, progressively embracing a more digital payment landscape. While cash previously dominated most of the POS transaction value as of 2021, it experienced a substantial reduction to 39% of the POS value in 2022 (FIS, 2023). The predominant shift in spending at POS has been towards debit cards, credit cards, and digital wallets, with the digital wallet market dominated by Mada Pay and STC Pay (FIS, 2023). A fundamental objective of Vision 2030 is to expedite the development of Saudi Arabia's digital economy, with a targeted increase in cashless transactions to 70% by 2025 (Saudi Central Bank, 2021). Notably, deep-seated cultural traditions, particularly evident among shoppers and traders in local markets, have historically contributed to Saudi Arabia remaining predominantly a cash society until recent times (Saudi Central Bank, 2021).

A study conducted by Chen et al. (2022) delved into the determinants influencing the behaviours of individuals in Saudi Arabia regarding adopting e-payment systems. The research revealed a correlation between e-payment adoption and

consumers' perceived benefits, ease of use, security, trust, and self-efficacy. The study suggests that in developing a cashless solution, service providers and the central bank should consider these identified factors to expedite the adoption of digital payments.

Kenya

Kenya's M-Pesa serves as a seminal case study in Africa's evolution of cashless payments. Introduced in 2007 by Safaricom, M-PESA revolutionised financial inclusion by introducing mobile-based money transfer and payment services. This innovation has facilitated access to financial services through mobile phones for millions of Kenyans, including those without traditional banking access (Central Bank of Kenya, 2023).

The Central Bank of Kenya (CBK) is leveraging the success of M-PESA and the National Payment System (NPS) to improve Kenya's retail and mobile money system, making the system more stable and secure. This initiative aligns with their NPS Strategy 2022-2025, which they announced in February 2022 (Central Bank of Kenya, 2023). This shows the government's dedication to improving the country's payment ecosystem. In July 2022, mobile money transactions in Kenya amounted to an average of $23 billion monthly. The active user base had grown significantly from nearly one million in 2007 to over 28 million by July 2022, representing more than half of Kenya's population. The Central Bank of Kenya's report highlights a remarkable increase in financial inclusion, establishing Kenya among the global leaders in this aspect (Central Bank of Kenya, 2023).

On May 3, 2023, the CBK inaugurated issuing the Kenya Quick Response Code Standard 2023 (KE-QR Code Standard 2023). This standard guides payment service providers and banks in administering Quick Response (QR) codes to customers and businesses that accept digital payments (Central Bank of Kenya, 2023). The milestone of publishing the QR code standard signifies the Central

Bank of Kenya's ongoing dedication to transitioning Kenya to a cashless economy.

Nigeria

Nigeria is one of the few countries worldwide that has already implemented a Central Bank Digital Currency (CBDC), as highlighted by FIS (2023). The Nigerian government has also implemented policies that impose strict limitations on cash withdrawals from banks and ATMs, aiming to encourage the adoption of a cashless economy (CBN, 2011; FIS, 2023). However, despite these efforts by the Central Bank of Nigeria (CBN), cash still dominates POS payments in Nigeria, primarily due to transactions within the informal economy. FIS (2023) states that in 2022, cash accounted for 62% of the total value of POS transactions in Nigeria, representing the highest cash usage rate among the markets covered in the Global Payment Report 2023.

However, the Nigerian government is aware of its highly cash-dependent economy; as part of the strategy to change its current situation, it partnered with Mastercard to reshape Nigeria's payment landscape by introducing its innovative contactless payment solutions. This solution empowers businesses, facilitating easy and cost-effective card payments through features such as tap-and-go, QR code transactions, and mobile phone digital payments (Mastercard, 2023).

2.2.6 *South Africa CLP adoption*

In 2023, FIS reported that South Africa has a well-established and steady payments market dominated by card transactions. Cards accounted for most of the value of POS transactions, with cashless transactions surpassing cash transactions (65% versus 35%) (FIS, 2023). The World Bank also agrees with this perspective, stating that South Africa is leading in adopting digital payments compared to other developing nations (Demirgüç-Kunt et al., 2022). According to the World Bank, cash payments account for only around 40% of merchant

transactions in South Africa, whereas in Tanzania and Bangladesh, the corresponding figure is as high as 90% (Demirgüç-Kunt et al., 2022).

According to FIS (2023), digital wallets accounted for 7% of POS spending in 2022, representing a slow adoption rate compared to countries like China, which had 56%. However, the share of digital wallets is estimated to increase to 29% by 2026 (FIS, 2023). A new real-time payment system called Payshap was launched in 2023 by BankservAfrica (PayShap, n.d.). This system aims to provide a viable alternative to cash payments and emphasises making digital payments more accessible and user-friendly for everyone in South Africa. The inspiration for Payshap came from the Reserve Bank of South Africa National Payment System Framework and Strategy Vision 2025, aligning with the goals outlined in that framework (FIS, 2023; SARB, n.d.).

While South Africa has made significant strides in adopting cashless payments, mainly debit and credit cards, there are still areas of improvement, especially in digital payments. The World Bank conducted a study revealing that 17% of adults with an account (whether a bank account, mobile money account, or digital wallet) still prefer to make payments in cash (Demirgüç-Kunt et al., 2022). The World Bank suggests that this preference for cash may stem from various barriers, including perceived risk, lack of trust, and limited knowledge (Demirgüç-Kunt et al., 2022), highlighting that approximately 50% of mobile money users in SA require assistance to use their mobile money accounts for transactions (Demirgüç-Kunt et al., 2022). The current study aims to contribute more insight into the factors that significantly influence the adoption of cashless payment in SA. Refer to section 2.3 for more information on the development of the hypothesis.

2.3 Cashless Payments Adoption in the Informal Sector

The surge in attention towards adopting cashless payments within the informal sector, encompassing entities like street vendors, hawkers, spaza shops, and micro-enterprises, has become a focal point for enhancing financial inclusion and fostering economic growth. Despite these aspirations, merchants in the informal sector predominantly engage in cash transactions, influenced by factors such as limited access to banking services, inadequate infrastructure, and the prevailing customer preference for cash payments. Cash plays a crucial role in facilitating transactions within the informal economy, offering a means to circumvent government regulations and oversight (ATKearney & Visa, 2021; Klapper et al., 2019; Oh & Zhang, 2022).

Research conducted by Oh and Zhang (2022) indicates that countries with sizable informal sectors tend to exhibit fewer digital payment transactions, as cash provides users anonymity, allowing them to conceal transaction histories and evade tax obligations. Their study explored the relationship between the informal economy and adopting central bank digital currency (CBDC). It suggests that CBDC may encounter challenges in gaining widespread acceptance in a substantial informal economy where cash remains the primary payment method. While CBDC can potentially reduce informality, its efficacy diminishes in countries with larger informal economies (Oh & Zhang, 2022).

According to ATKearney and Visa (2021), a 10% increase in global digital payment adoption could contribute an additional $1.5 trillion to the world economy. Furthermore, ATKearney and Visa (2021) assessed the global informal economy at over $10.7 trillion in 2016, representing 23% of all economic activity. The study revealed that the size of the informal economy relative to GDP is most prominent in Africa, Asia, and Latin America, with over half of the markets featuring an informal economy valued at more than 25% of GDP. Notably, in 2016, the countries with the most significant informal economies as a share of GDP were Nigeria (53%), Bolivia (46%), and Thailand (45%), while South Africa's

informal economy contributed 22.4% to its GDP (ATKearney & Visa, 2021). Countries with higher levels of digital adoption demonstrated a lower contribution from the informal economy to their GDP, exemplified by the USA (8%), Japan (8%), and Switzerland (9%) (ATKearney & Visa, 2021).

According to Klapper et al. (2019), approximately 50% of informal traders, e.g., street vendors, worldwide have a mobile money account, a mobile device, an internet connection, and the self-efficacy to adopt cashless transactions in their businesses. This number is even higher in sub-Saharan countries like Kenya, Zimbabwe, and Tanzania (Klapper et al., 2019). Card-based payments often take precedence in regions where mobile money is unusual or non-existent. For instance, 32% of informal business owners in Argentina use debit or credit cards, while 21% in China and slightly over 10% in Zimbabwe and Kenya (Klapper et al., 2019).

The adoption of cashless payments in informal markets is influenced by various factors, including technology infrastructure, affordability of digital payment solutions, ease of use, trust in payment systems, regulatory support, and the willingness of market participants to embrace new payment methods (Oh & Zhang, 2022; Okeke & Eze, 2018). However, a study by Prasad et al. (2023) focused on the adoption of digital payments by street vendors in India indicates that while digital literacy strongly influences the behavioural intention to use cashless payments among street vendors, privacy risk and security do not significantly impact this intention. Prasad et al. (2023) recommend that service providers and the Indian government invest in cyber security literacy and awareness within the community, as street vendors might be unaware of the risks and security threats associated with digital payments.

Some studies recommend implementing tax reduction policies and minimising the cost of using cashless payments, which includes interest and transaction costs, as strategies to promote the adoption in the informal sector (Oh & Zhang, 2022).

2.4 Theoretical Framework and Hypothesis Development

According to Bruno and Faggini (2022), consumers tend to choose merchants who prefer the same payment methods as they do. However, their decision is influenced by functional and psychological factors. Ease of use, performance expectations, effort expectancy, and social norms have been identified as primary factors (Venkatesh et al., 2003; Venkatesh et al., 2012). Additionally, Bruno and Faggini (2022) found that the value or price of goods and services also plays a crucial role in determining a consumer's preferred payment method. Their research indicates that consumers prefer using cash over digital payments for lower-priced items.

Previous studies have examined factors that promote or hinder technology adoption (Neto & de Figueiredo, 2022; Raj et al., 2023; Zhao et al., 2019)However, more peer-reviewed studies must focus on adopting cashless or digital payment methods in informal markets, such as street vendors and hawkers. This study addresses this gap by extending the UTAUT2 framework and incorporating privacy factors. It will test seven hypotheses about adopting cashless payments (see Figure 2-1 below).

2.4.1 *UTAUT*

Unified Theory of Acceptance and Use of Technology (UTAUT) was developed by Venkatesh et al. (2003) as a comprehensive consolidation of the previous eight models, namely: “Theory of Reasoned Action (TRA)”, “Social Cognitive Theory (SCT)”, “Technology Acceptance Model (TAM)”, “Theory of Planned Behaviour (TPB)”, “Combine TAM and TPB (C-TAM-TPB)”, “Model of PC Utilization (MPCU)”, “Decomposed Theory of Planned Behaviour (DTPB)”, and “Innovation Diffusion Theory (IDT)”. These models determine key technology acceptance factors (Venkatesh et al., 2003).

Through an analysis of existing literature, Venkatesh et al. (2003) identified four primary factors within UTAUT that affect the intention to use technology and the actual use of technology. These factors are performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC) Venkatesh et al. (2003). This view is also supported by (Al-Saedi et al., 2020; Aslam et al., 2021; Raj L et al., 2021; Raj et al., 2023). These studies discovered that performance expectancy, effort expectancy, and social influence significantly impact behavioural intention to use technology. In other words, individuals are more likely to adopt a technology if they believe it will provide benefits, perceive it as easy to use, and feel that others support it. On the other hand, behavioural intention and facilitating conditions were found to be determinants of actual technology use, meaning that individuals are more likely to use technology when they have the intention to use it and when they perceive that there are sufficient resources and support available for them to utilise the technology (Al-Saedi et al., 2020; Aslam et al., 2021; Raj L et al., 2021; Raj et al., 2023; Venkatesh et al., 2003).

2.4.2 *UTAUT2*

According to Venkatesh et al. (2012), while UTAUT focused on technology adoption within organisations, there needed to be more understanding regarding the determinants of technology adoption from the perspective of individual consumers. Venkatesh et al. (2012) conducted a study to expand upon the UTAUT model and created UTAUT2 to address this gap. UTAUT2 builds upon UTAUT by introducing three additional factors that influence the behavioural intention to use technology from an independent consumer's viewpoint: Price Value (PV), Habit (Ht), and Hedonic Motivation (HM) (Venkatesh et al., 2012). In consumer technology use, price becomes a significant factor because consumers must consider the costs associated with adopting the technology, unlike in workplace settings where the organisation often covers these costs (Venkatesh et al., 2012).

UTAUT2 has gained considerable popularity among researchers investigating individuals' adoption behaviour in information technology. Its extensive scope and explanatory power have led many researchers to utilise UTAUT2 in their studies extensively (Anshari et al., 2021; Aslam et al., 2021; Santosa et al., 2021). Multiple studies, Al-Saedi et al. (2020), Aslam et al. (2021), and Raj et al. (2023) indicate that the UTAUT framework thoroughly explains consumers' behavioural intention to adopt Cashless Payments (CLP) across various contexts. However, UTAUT only partially encompasses factors that hinder consumers from embracing cashless payments. In response, this study modifies UTAUT2 by incorporating additional inhibiting privacy factors hypothesised to negatively impact CLP adoption.

The enhanced UTAUT2 model encompasses influential components such as "performance expectancy (PE)," "effort expectancy (EE)," "social influence (SI)," "Price Value (PV)," "Habit (Ht)," "perceived trust (PT)," "perceived risk (PR)," and "behavioural intention to use (BIU)" Cashless Payments (CLP) (Al-Saedi et al., 2020; Chauhan et al., 2022; Widyanto et al., 2022). This modification aims to provide a more comprehensive understanding of the factors influencing consumers' decision-making process regarding adopting cashless payments while considering the inhibiting effect of privacy-related concerns.

2.4.3 *Perceived Risk (PR)*

Perceived Risk (PR) pertains to people’s beliefs regarding the potential adverse outcomes, such as a CLP user losing money through different cybercrimes and incorrect transaction amounts withdrawn by the merchant from their account. This perception of risk can impede the adoption and usage of CLP because when users are not sure whether their money is safe while utilising the CLP methods, they will turn to an alternative method that is safer in their perception (which is hard cash) (Raj et al., 2023).

Studies by Raj et al. (2023), Neto and de Figueiredo (2022), and Zhao et al. (2019) indicate that individuals' perceived risk significantly negatively impacts their behavioural intention to use CLP. For PR to negatively impact BIU, it means CLP users will not risk losing their money or private information by using CLP methods. Financial service providers must guarantee the safety of the CLP methods to influence their adoption. Contrary to this finding, Al-Saedi et al. (2020) and Widyanto et al. (2022) studies found that PR has an insignificant impact on behavioural intention to use mobile payment systems; this indicates that there are still different perceptions regarding the security of cashless payments. Therefore, in the context of South African informal markets, we hypothesise:

- ***H1****: PR negatively impacts BIU cashless payments.*

2.4.4 *Perceived Trust (PT)*

Perceived Trust (PT), as discussed by Al-Saedi et al. (2020), refers to the level of confidence an individual has in the financial sector and its payment technology based on past experiences or the reputation of specific financial institutions. This perspective is further supported by similar studies conducted by Kaur et al. (2021), Ananda et al. (2020), and Sarmah et al. (2021). Additionally, Widyanto et al. (2022) emphasised the influence of PT when users initially engage with a particular payment technology.

Recent research conducted by Lisana (2021), Widyanto et al. (2022), Patil et al. (2020), and Saha et al. (2022) confirm that PT significantly impacts users' intention to adopt cashless payments (CLP). These studies suggest that consumers' willingness to adopt a paid technology highly depends on their perceived trust. Hence, this study hypothesises:

- ***H2****: Perceived Trust (PT) positively impacts the behavioural intention to use (BIU) cashless payments (CLP).*

2.4.5 *Performance Expectancy (PE)*

Performance Expectancy (PE), defined by Venkatesh et al. (2003), refers to the extent to which an individual believes a system will enhance their efficiency in accomplishing tasks. Venkatesh et al. (2003) developed the PE factor by drawing upon previous theoretical frameworks that address performance expectancy, including perceived usefulness (Technology Acceptance Model and Theory of Planned Behaviour), extrinsic motivation (Motivational Model), job fit (Model of PC Utilization), relative advantage (Innovation Diffusion Theory), and outcome expectations (Social Cognitive Theory). In each of these models, the construct of performance expectancy emerges as the most influential predictor of the intention to use new technology (Venkatesh et al., 2003). This theory is also supported by recent studies by Raj et al. (2023), Al-Saedi et al. (2020), Santosa et al. (2021), Widyanto et al. (2022), Lu and Kosim (2022), Saha and Kiran (2022) their findings suggest that if consumers perceive cashless payment technologies as valuable, they would be highly inclined to adopt them. Hence, the hypothesis:

- ***H3****: Performance Expectancy (PE) positively impacts the behavioural intention to use (BIU) cashless payments (CLP).*

2.4.6 *Effort Expectancy (EE)*

Effort Expectancy (EE), as described by Venkatesh et al. (2003), pertains to the perceived ease or difficulty of using a specific technology. Other models define this construct as perceived ease of use (Technology Acceptance Model), complexity (Model of PC Utilization), and ease of use (Innovation Diffusion Theory) (Venkatesh et al., 2003). In support of the UTAUT model, Santosa et al. (2021), Majumdar and Pujari (2022), and Srivastava and Vishnani (2021) found that a user's willingness to utilise Cashless Payment (CLP) services can be determined by how the user perceives the easiness of using the technology and the effort they are will to put into learning how to use the technology. Customers

who perceive CLP as user-friendly and easy to use are more inclined to employ it for financial transactions (Raj et al., 2023).

Further studies have found a significant correlation between the level of EE and the behavioural intention to use cashless payment methods (Lu & Kosim, 2022; Neto & de Figueiredo, 2022; Raj et al., 2023; Saha et al., 2022). Hence, the hypothesis:

- ***H4****: Effort Expectancy (EE) positively impacts the behavioural intention to use (BIU) cashless payments (CLP).*

2.4.7 *Social influence*

According to Venkatesh et al. (2003) social Influence (SI) refers to the level of influence one person may have on another person's adoption of a new technology. In organisational settings, SI is considered a direct determinant of behavioural intention and is represented as the subjective norm in various theoretical models such as the Theory of Reasoned Action (TRA), TAM2, TPB/DTPB, social factors in the Model of PC Utilization (MPCU), and image in Innovation Diffusion Theory (IDT) (Venkatesh et al., 2003). However, in UTAUT2, Venkatesh et al. (2012) SI has an insignificant influence on consumers' behavioural intention to use new technology outside of organisational contexts (UTAUT) unless there is a regulatory mandate for its use, with its significance mediated by the voluntary controlling factor.

In contrast to UTAUT2, a study by Al-Saedi et al. (2020) indicated that the second strongest predictor of mobile payment users' intention to use the technology is Social Influence (SI). This finding is supported by Santosa et al. (2021), who found that SI is the third most influential factor in adopting cashless payments. Additionally, further research by Raj et al. (2023), Al-Saedi et al. (2020), Santosa

et al. (2021), Lu and Kosim (2022), Saha and Kiran (2022), Singh and Srivastava (2020), and Widyanto et al. (2022) revealed that social influence directly and significantly affects the behavioural intention to use mobile payment. These previous studies suggest that SI plays a crucial role in explaining the influence of social factors, such as friends, family, and colleagues, on individuals' intention to use cashless payment services, contradicting the findings of Venkatesh et al. (2012). Hence the hypothesis:

- ***H5****: Social influence positively influences behavioural intention to use (BIU) cashless payments.*

2.4.8 *Price Value (PV)*

According to Venkatesh et al. (2012) Price Value (PV) refers to the cost a user incurs by adopting a technology. The perceived cost can be broken down into transaction costs charged by CLP providers, internet connection, airtime required for the transaction, and an indirect cost for purchasing the instrument used to transact, i.e. a cell phone (Al-Saedi et al., 2020; Santosa et al., 2021). It is important to note that in a consumer use setting, unlike in an organisational use setting where UTAUT was initially developed, consumers typically bear the monetary cost of using technology, while employees do not. Therefore, the cost and pricing structure can significantly impact consumers' technology adoption and usage (Venkatesh et al., 2012). In UTAUT2, price value is defined as the cognitive trade-off consumers make between the perceived benefits of the applications and the monetary cost associated with using them (Venkatesh et al., 2012).

Venkatesh et al. (2012) hypothesised that PV has a negative impact on technology adoption when individuals perceive the monetary cost of using the technology to outweigh the benefits of using a technology. Recent studies by Raj et al. (2023), Santosa et al. (2021), and Al-Saedi et al. (2020) support this theory; their findings indicate that price value has a significant negative impact on the

behavioural intention to use cashless payment systems. Therefore, we hypothesise:

- ***H6****: Price Value (PV) negatively influences behavioural intention to use cashless payments.*

2.4.9 *Habit (Ht)*

According to UTAUT2, Habit (Ht) refers to the extent to which individuals tend to perform behaviours automatically based on previous learning. It can be understood as prior behaviour and measured by the degree to which individuals perceive the behaviour to be automatic (Venkatesh et al., 2012).

Venkatesh et al. (2012) discovered that Habit (Ht), moderated by factors such as age and experience, positively influences technology adoption. This influence operates through stored intention (prior behaviour) and instant activation (automaticity). Other studies conducted by Santosa et al. (2021) and Chauhan et al. (2022) have further revealed that the continuous use of digital payment transactions has become a habit and a form of dependency. This dependency leads users to perceive digital payments as an integral part of their lives, resulting in a behavioural intention to continue using these payment methods. This suggests that consumers accustomed to cashless payment methods will likely persist in using them. Hence the hypothesis:

- ***H7****: Habit (Ht) positively influences behavioural intention to use cashless payments.*

2.5 RESEARCH MODEL

The study's research model is outlined in Figure 2-1 below. It diagrammatically outlines the enhanced UTAUT2 framework with the seven hypotheses developed for the study. It provides an integrated overview of the study's theoretical and empirical concepts. The model was inspired by research conducted by Raj et al. (2023). Please refer to section 2.4 above for more information on the seven hypotheses developed for the current study.

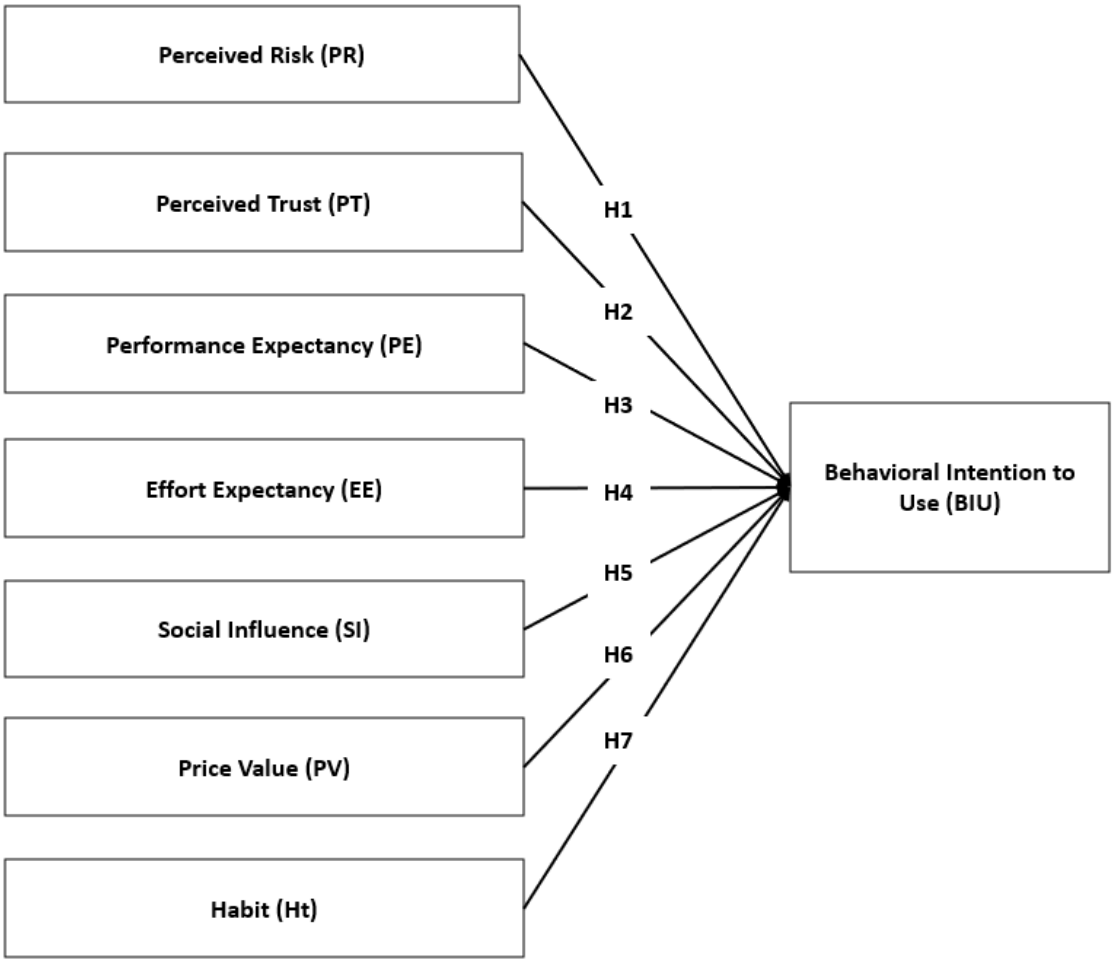

Figure 2-1: Research model

2.6 Conclusion of Literature Review

Based on identified gaps and opportunities, the study formulated seven hypotheses that need to be tested by collecting data from individuals who buy goods and services from the informal sector. Below are the seven hypotheses:

- H1: PR negatively impacts BIU CLP
- H2: PT positively impacts BIU CLP
- H3: PE positively impacts BIU CLP
- H4: EE positively impacts BIU CLP
- H5: SI positively impacts BIU CLP
- H6: PV negatively impacts BIU CLP
- H7: Ht positively impacts BIU CLP

CHAPTER 3. RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the research methodology adopted by this study to address the research questions and hypotheses covered in chapters 1 and 2 above. It covers the research paradigm, approach, research design, the method and instrument used for data collection, sampling strategy, reliability, validity, and ethical considerations.

3.2 Research Paradigm

The study explored different perspectives on research philosophy, focusing on epistemology, ontology, and axiology. Epistemology deals with what counts as valid knowledge in a field, while ontology delves into the nature of reality and the assumptions researchers make about how the world works. Axiology, on the other hand, examines value judgments (Saunders et al., 2007). For business and management research, the study opts for an epistemological approach, as suggested by Saunders et al. (2007).

The epistemological ways of thinking about research philosophy can be categorised into positivism and interpretivism. Positivism focuses on observable social phenomena that can be generalised, compared to interpretivism, which requires the researcher to be an actor in the research, interpreting participants' feelings or attitudes on their terms. Interpretivism is particularly well-suited for qualitative studies where researchers conduct interviews to gather data (Saunders et al., 2007). Therefore, interpretivism was not suitable for the current study.

This study adopts a positivist epistemology, emphasising an objective and systematic approach to understanding the factors influencing the adoption of cashless payments comprehensively (Saunders et al., 2007). This study is conducted from a positivist viewpoint to achieve a generalisable perspective on the factors hindering the adoption of a cashless economy in the informal market. The positivist approach is aligned to uncover empirically grounded insights into the phenomenon under investigation (Saunders et al., 2007)The chosen research design is a cross-sectional survey, which will gather data on observable indicators of each exogenous variable. This will offer a snapshot of the current state of cashless payment adoption and the factors that influence it among customers in the informal sector.

The selection of a positivist philosophy is based on the belief that social phenomena, such as the adoption of cashless payments, can be objectively studied through systematic observation and measurement. Positivism asserts that reality is external and objective and can be understood through empirical evidence (Saunders et al., 2007)This research employs a positivist perspective and aims to establish relationships between latent variables and consumers' behavioural intention to adopt cashless payments in an informal sector setting.

3.3 Research Approach

The study employed a quantitative research approach, which focused on objective measurement and analysis of numerical data (Creswell & Creswell, 2018; Kumar, 2014). A quantitative approach was suited for this study because an existing structured UTAUT2 framework founded the study (Venkatesh et al., 2012). As per Creswell and Creswell (2018), the quantitative method is better suited for studies that aim to determine factors influencing an outcome, determine the most effective predictors, and test an existing theory or framework.

This study aims to understand the factors that are influencing cashless payment adoption in the South African informal sector; this aim makes a quantitative analysis a suitable approach as it allows for the comprehensive examination of factors influencing adoption and the assessment of relationships between variables (Creswell & Creswell, 2018; Kumar, 2014). This study identified a predetermined set of latent variables for investigation. The objective is to measure the extent of influence that different factors have on a consumer's behavioural intention to adopt payment technologies. The focus will be on assessing the relationship among these variables and maintaining objectivity throughout the research process.

This study also drew inspiration from recent similar empirical studies by Raj et al. (2023), Neto and de Figueiredo (2022), and Sleiman et al. (2022), which used a quantitative research approach to explore the adoption of cashless payments using UTAUT and UTAUT2 and delivered valid and reliable findings.

3.4 Research Design

This study adopts a Survey research design. This study has chosen this design as it provides an efficient and standardised means of collecting data from many respondents (Kumar, 2014), capturing diverse perspectives on adopting cashless payments. The survey design allows for the collection of quantifiable data that can be statistically analysed by employing Structural Equation Modelling (SEM) using SPSS AMOS (Anderson & Gerbing, 1988). It provides insights into the factors and variables related to cashless payment adoption.

Studies by Raj et al. (2023), Neto and de Figueiredo (2022), and Sleiman et al. (2022) These studies employed a survey research design to understand the factors that influence the adoption of cashless payments using UTAUT and UTAUT2; they produced valid empirical results. Therefore, given that their studies

are very similar to this current study, their findings inspired the decision for this study to employ the survey research strategy.

Online Survey advantages of this study:

- It saved time and money.
- it made the questionnaire preparation process more accessible and standardisable.
- It allowed rapid data collection from many participants who reside in diverse geographic locations in SA.
- it was easier to manage and distribute to participants.

The experienced advantages above are aligned with the recommendations by Kumar (2014).

Online Survey disadvantages of this study:

- Some people do not have internet access; therefore, they could not participate in the survey.
- There is no sampling frame for internet users. Therefore, the study could not adopt a random sampling strategy; the study had to adopt a non-probability sampling method (Kumar, 2014).
- Because it is an online self-administered survey, the response rate was unpredictable.

3.5 Data collection methods

Data for this study was collected using an online self-administered survey. Respondents were asked to respond to statements or items about their behavioural intention and attitude towards adopting cashless payments. The questionnaire utilised a five-point Likert scale, where respondents can indicate their opinion by rating them on a scale from “Strongly Disagree” to “Strongly

Agree” (Kumar, 2014). This data collection method was suited for gathering large data sets from a large population. Before completing the questionnaire, participants were provided with clear instructions and information about the study's purpose and ethical considerations. Data was collected over four months using an online survey platform, i.e., email, websites and mobile (Kumar, 2014).

3.6 Population and sample

3.6.1 *Population*

The population consisted of individuals who bought goods and services in the South African informal market; the exact number could not be estimated due to the lack of a predetermined number of consumers in this sector. The data collected showed that Gauteng accounted for 72% of participants who completed the survey. Before the survey was distributed, there was no comprehensive database or registry of potential participants for the study, which made it difficult to ascertain the exact population size.

3.6.2 *Sample and the Sampling Method*

A sufficient sample size 385 was recommended based on Raosoft sample size software. The software is based on a Cochran formula (see Figure 2), as described by Cochran (1977); the purpose of this formula is to determine a suitable sample size that can produce generalisable results for the entire population with an acceptable level of precision (Cochran, 1977).

$$n_0 = \frac{Z^2 p(1-p)}{e^2}$$

Figure 3-1: Cochran Formula

Where n_0 represents the sample size, Z is the critical value representing the desired confidence level, p denotes the estimated proportion of a specific attribute existing in the population, and e denotes the desired level of precision (Cochran, 1977).

The aforementioned sample sizing software was then employed to perform the calculations with the variables below (Raosoft, n.d.):

- The margin of error was set to 5%.
- confidence level set to 95%
- Population size set to infinite (greater than 20000)
- response distribution set to 50%

Using the variables stated above, the Raosoft sample sizing software recommended a minimum of 385 participants for the study's findings to be generalisable. The respondents were selected using a non-probability convenience sampling method. This sampling technique involves selecting respondents based on their accessibility and willingness to participate, ensuring ease of data collection (Cochran, 1977; Kumar, 2014). The drawback of convenience sampling is that the findings cannot be generalisable to the entire population (Cochran, 1977). The anonymous survey link was distributed to the University of the Witwatersrand students via email and to the broader South African community via WhatsApp, X (also known as Twitter), Facebook, and other social media platforms. Four hundred seventeen (417) people participated in the survey by accessing the anonymous link, surpassing the recommended three hundred eighty-five (385) sample size.

3.7 The Research Instrument

This study facilitated data collection through a self-administered online survey, employing Qualtrics as the web-based platform. The questionnaire was divided into two main sections: the first collected participants' demographic information, and the second collected data on observable indicators underlying the exogenous and endogenous latent variables discussed in Chapter 2 (Literature Review).

In the second section of the questionnaire, the observable measures used in this study were adapted from previous research. Table 3-1 provides a detailed measure employed. The measurable constructs for perceived trust (PT), perceived risk (PR), and price value (PV) were adopted from the studies conducted by Raj et al. (2023) and Santosa et al. (2021). The observable measures for performance expectancy (PE), effort expectancy (EE), and social influence (SI) are based on the UTAUT framework and were adopted from the research conducted by Venkatesh et al. (2003). Furthermore, the observable measures for habit (Ht) were adopted from Santosa et al. (2021). All indicators in the questionnaire were collected using a five-point Likert scale, ranging from "strongly disagree" to "strongly agree."

Table 3-1: Measures and Source

Construct	Variable Type	Source
Performance expectancy	Exogenous	(Venkatesh et al., 2003)
Effort Expectancy	Exogenous	(Venkatesh et al., 2003)
Perceived Trust	Exogenous	(Raj et al., 2023; Santosa et al., 2021)

Perceived Risk	Exogenous	(Raj et al., 2023; Santosa et al., 2021)
Price Value	Exogenous	(Raj et al., 2023; Santosa et al., 2021)
Social Influence	Exogenous	(Venkatesh et al., 2003)
Habit	Exogenous	(Santosa et al., 2021)
Behavioural Intention to Use CLP	Endogenous	(Venkatesh et al., 2003, 2012; Lisana 2021)

3.8 Procedure for Data Collection

The survey link was shared with students enrolled at WITS for 2023 and with the broader South African community through social media platforms such as X (also known as Twitter), Facebook, and WhatsApp. The survey initially obtained 417 responses, subsequently undergoing a data cleansing procedure. During this process, responses with less than 100% completion were excluded. These incomplete responses belonged to participants who either opted out before finishing the entire survey or selected an option indicating no prior usage of a cashless payment method to buy goods or services. Following the data cleansing, the number of respondents decreased to n=325.

3.9 Data analysis strategies and interpretation

The data was analytically processed using Structural Equation Modelling (SEM) in the Statistical Package for the Social Sciences (SPSS) AMOS software. The study followed a two-step SEM approach, first evaluating the measurement model and then estimating the structural model. The measurement model was

used to examine the reliability and validity of the constructs, while the structural model was employed to test the hypothesis by determining the significance of the relationship between the latent variables (Anderson & Gerbing, 1988; Kline, 2016).

Structural Equations Modelling (SEM)

SEM was selected as a more suitable model for this study. The study has latent variables, such as perceived trust, perceived risk, price value, etc., that have underlying observed indicators used to collect consumers' perceptions using a five-point Likert scale questionnaire. The collected data were used to validate the measurement properties of latent constructs by assessing the relationships between observed variables and the underlying constructs, assessing the model fit, establishing construct validity, and finally testing the hypothesis illustrated in Figure 1 above. To test the hypothesis using SEM, the study will examine the standardised path coefficients between latent constructs (exogenous latent variables and the behavioural intention to adopt CLP) and then determine the statistical significance of these relationships. Anderson and Gerbing (1988) proposed a two-step approach for SEM, which are measurement models and structural models. The former analyses the relationship between observed and latent variables, while the latter analyses the influence between exogenous variables and endogenous variables.

SEM Assumptions

SEM is fundamentally rooted in multivariate statistical methodologies, necessitating the examination of data to ensure adherence to the underlying assumptions of these statistical foundations. When implementing SEM, it is often imperative to satisfy certain assumptions to achieve robust analytical outcomes. Assessing the data for conformity with the statistical assumptions inherent in multivariate techniques is crucial, as these assumptions form the basis for valid statistical inferences and results (Hair Jr et al., 2010). Key issues considered in

this research include data linearity, normality, handling of missing data, identification of outliers, and adequacy of sample size.

Measurement Model (Confirmatory Factor Analysis - CFA)

This study utilised Confirmatory Factor Analysis (CFA), a constrained model particularly apt for theories with predefined observable indicators restricted to specific factors. Given the adoption of an enhanced UTAUT2 framework in this study, SEM was deemed more appropriate. CFA aims to confirm or validate the measurement properties of a set of observed variables by testing how well they reflect underlying latent constructs. Figure 3-2 below is a schematic diagram that outlines a typical CFA model (Kline, 2016).

As depicted in Figure 3-2, latent constructs are conceptual entities not directly observed but inferred from observed variables (indicators) (Kline, 2016), which were collected in this study via an online survey. Factor loadings denote the strength and direction of relationships between indicators and their corresponding latent constructs (Kline, 2016). CFA also addresses measurement errors (e.g., e1, e2, e3), representing unexplained variability in observed variables. By modelling measurement errors, CFA distinguishes between accurate scores (latent constructs) and measurement errors (Kline, 2016). The CFA model underwent processing using SPSS AMOS, producing fit indices (e.g., chi-square statistic, CFI, TLI, RMSEA, SRMR) to assess its fit to the data.

Structural Model

Following the establishment of the measurement model, the subsequent step involves evaluating the structural model and examining relationships among latent constructs (exogenous and endogenous variables) (Anderson & Gerbing, 1988). Path coefficients in the structural model depict the strength and direction of relationships between exogenous and endogenous variables, explaining how changes in one variable affect changes in another (Kline, 2016).

A full structural model integrates both the measurement model (CFA) and the structural model, providing a comprehensive framework for testing intricate theoretical models and understanding relationships between observed and unobserved variables.

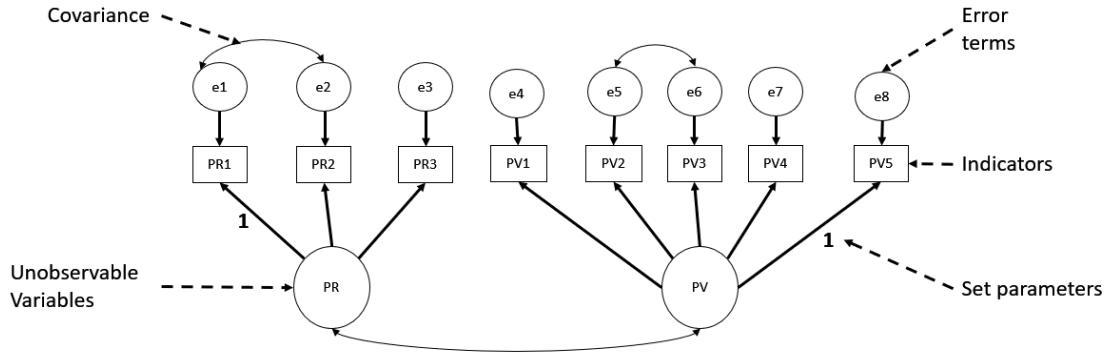

Figure 2-2: CFA model example

3.10 Quality Assurance

3.10.1 *External validity*

External validity refers to generalising the study findings to a larger population (Creswell & Creswell, 2018; Kline, 2016). Convenience sampling may limit the external validity of the study (Creswell & Creswell, 2018; Kline, 2016). Efforts were made to ensure a diverse sample that represents different demographics and contexts with a certain level of success; however, from a geographic location's point of view, an overwhelming 72% of the participants were from the Gauteng province.

3.10.2 *Internal validity*

The sampling strategy selected for this study was the convenience non-random sampling strategy, which has generalisability limitations(Creswell & Creswell,

2018; Kline, 2016). However, there are several steps that the study took to enhance internal validity, i.e., the use of a reliable instrument (a questionnaire), clearly explained the purpose and instructions to the participants, ensured anonymity and confidentiality to reduce social desirability biases, and designed the questionnaire to minimise non-response bias (Creswell & Creswell, 2018; Kline, 2016). Additionally, a pilot was conducted with a small group of participants to identify ambiguities or issues with the survey questions. The pilot enabled revisions to improve the clarity and validity of the survey instrument.

3.10.3 *Construct validity*

Construct validity assesses whether a measurement tool accurately measures the underlying theoretical construct or concept it purports to measure. Construct validity is typically established through a combination of convergent validity (the degree of correlation with similar constructs) and discriminant validity (the degree of differentiation from unrelated constructs) (Kline, 2016).

Convergent validity was assessed by evaluating the strength of the relationships between the observed variables and their respective latent constructs (Kline, 2016). By employing CFA, convergent validity was achieved by examining the strength of the factor loadings between indicators and their corresponding latent constructs. High factor loadings indicate strong convergent validity.

Discriminant validity was assessed by examining whether the observed variables load more strongly on their separate constructs than others, indicating that they are distinct constructs (Kline, 2016). By employing the CFA model, discriminant validity was evaluated by comparing the correlations between latent constructs. Low correlations between unrelated constructs provide evidence of discriminant validity(Kline, 2016).

3.10.4 *Reliability*

Reliability pertains to the consistency of findings obtained from data collection methods and analytical procedures when repeated on a different occasion or replicated by other researchers (Creswell & Creswell, 2018; Kline, 2016). The online survey ensures a certain level of reliability for a study; it eliminates participant error and researcher errors because it is self-administered at a time and place of the participant's convenience (Creswell & Creswell, 2018; Kline, 2016).

Cronbach's alpha (α)

Cronbach's alpha (α) was used to assess the internal consistency of the research instrument. Internal consistency refers to the extent to which the items in a scale are measuring the same concept consistently (Kline, 2016). A high alpha value suggests that the items in the scale are highly correlated with each other and are, therefore, likely to be measuring the same underlying construct reliably. Literature suggests that Cronbach's alpha should be at least 0.7 to be considered acceptable (Hair Jr et al., 2021). However, it is advised to avoid coefficients exceeding 0.95 to prevent indicator redundancy. The recommended range for Cronbach's alpha is between 0.7 and 0.9 (Hair Jr et al., 2021). This study utilised SPSS software to determine Cronbach's alpha on the collected data.

Composite Reliability (CR)

Construct reliability was evaluated using both Cronbach's Alpha and Composite Reliability (CR). Like Cronbach's alpha, composite reliability indicates the degree to which items in a scale measure the same underlying construct (Kline, 2016).

For each construct analysed in the study, Cronbach's alpha exceeded the stipulated threshold of 0.70 (Hair Jr et al., 2021). Composite Reliability spanned from 0.70 to 0.89 across all constructs, surpassing the 0.70 benchmark (Hair et

al., 2010). Consequently, the study established construct reliability for each construct examined. More comprehensive details can be found in Table 3-1.

3.11 Ethical considerations

According to Saunders et al. (2007), there are two primary philosophical viewpoints within business and management research: deontology and teleology. Deontology asserts that the ethicality of research cannot be justified by its outcomes. In contrast, teleology argues that the outcome justifies ethical and unethical processes taken to achieve that outcome. This study aligns with deontological principles and adheres to Wits University's ethical code of conduct.

Ethical considerations were essential throughout the research process, ensuring that participants were not subjected to any form of embarrassment or disadvantage. Before data collection, the Wits University data consent form was completed, committing to the university's guidelines for collection, processing, storage, and deletion. Clearance from the university's ethical committee was obtained before distributing the research survey. The introductory letter clearly stated the research's purpose, requested participants' assistance, and estimated the survey completion time. Participants were informed about the nature and objectives of the research, with assurance that their data would be processed and stored anonymously. They were given the choice to consent and proceed or opt out of the survey.

Although personal data such as age, gender, qualification, and province of residence were collected, strict measures were taken to anonymise the data, preventing the identification of individual participants. The survey link was also anonymous to safeguard participants' privacy.

In essence, this research ensured that participants provided informed consent, prioritised confidentiality and anonymity, and adhered to data protection regulations, thereby upholding ethical standards.

CHAPTER 4. DATA ANALYSIS AND FINDINGS

4.1 Introduction

This chapter discusses the data analysis and the findings derived from the study's questionnaire. It begins by outlining the respondents' profiles and examining their demographic information. Subsequently, it addresses the evaluation of the measurement model and then proceeds to assess the structural model, including hypothesis testing.

4.2 Respondents Demographics

The results reveal that 417 individuals participated in the survey. Figure 4-1 graphically represents how the respondents were distributed across the country, with 70.00% residing in Gauteng, 12.00% from Limpopo, 8.67% from the Western Cape, and only 9.33% from the other six provinces in South Africa. Among the respondents, 61.61% are female and 36.16% are male. These findings highlight that most participants (69.80%) fall within the 25 to 44 age brackets.

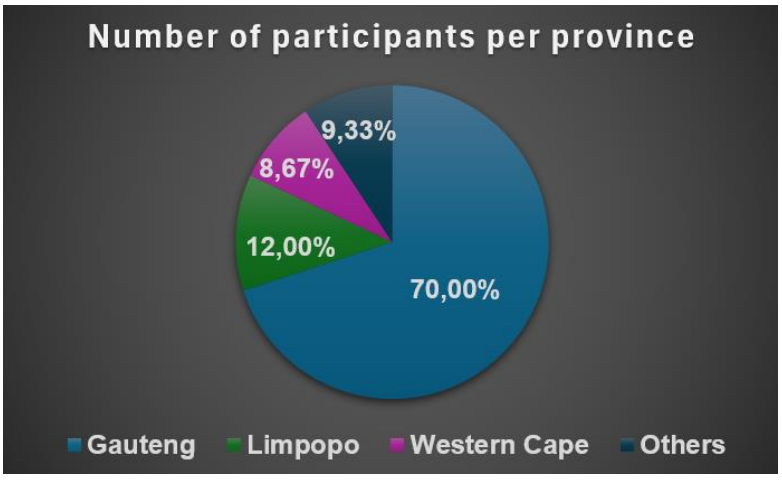

Figure 3-1: Number of participants per province

Regarding their educational background, 49.66% of the respondents hold postgraduate qualifications, 27.09% possess undergraduate degrees or diplomas, and 22.80% have at least completed grade 12. This suggests that this group of participants boasts a higher level of education. For a comprehensive breakdown of the respondents' demographic information, please refer to Table 4.

Table 4-1: Respondents demographic information

Constructs	Characteristics	Frequency	Percentage
Gender	Male	162	36.16%
	Female	276	61.61%
	Nonbinary	2	0.45%
	I prefer not to say	8	1.79%
Age	< 18 years	0	0.00%
	18 – 24 years old	93	20.35%
	25 – 44 years old	319	69.80%
	45 – 64 years old	45	9.85%
	> 65 years old	0	0.00%
Highest Level of Education	Postgraduate	220	49.66%
	Undergraduate Degree / Diploma	120	27.09%
	Grade 12	101	22.80%
	< Grade12	2	0.45%
Employment status	Employed	282	62.67%
	Self-employed	36	8.00%
	unemployed	22	4.89%
	Student	106	23.56%
	Other	4	0.88%
Residential Address	Gauteng	315	70.00%
	Limpopo	54	12.00%
	Western Cape	39	8.67%
	Mpumalanga	15	3.33%
	Eastern Cape	9	2.00%
	KwaZulu Natal	7	1.56%
	North West	8	1.78%
	Northern Cape	2	0.44%
	Free State	1	0.22%

4.3 Measurement model

Confirmatory Factor Analysis (CFA) was conducted using SPSS AMOS to examine the measurement models. During the CFA process, individual factor loadings were evaluated for each item, resulting in the removal of certain items (specifically EE2, PR4, PT5, SI1, and SI4) due to their low factor loadings (<0.50). Model-fit indices were employed to evaluate the overall appropriateness of the model (PCMIN/df, GFI, CFI, TLI, SRMR, and RMSEA), all of which fell within commonly accepted thresholds (Hair Jr et al., 2010). The eight-factor model (PE, EE, PT, PR, PV, SI, Ht, and BIU) demonstrated a favourable fit (refer to Table 2), with the following values: CMIN/df = 1.87, GFI = 0.89, CFI = 0.94, TLI = 0.93, RMSEA = 0.05, and SRMR = 0.06.

Table 4-2: Model fit

Fit Indices	Recommended Values	Source(s)	Obtained Value
P	Insignificant		0.00
PCMIN/df	<5		1.87
GFI	>0.90	(Hair Jr et al., 2010)	0.89
CFI	>0.90	(Bentler, 1990)	0.94
TLI	>0.90	(Bentler, 1990)	0.93
NFI	>0.90	(Bentler & Bonett, 1980)	0.88
IFI	>0.90	(Bentler & Bonett, 1980)	0.94
SRMR	<0.08	(Hu & Bentler, 1999)	0.06
RMSEA	<0.08	(Hu & Bentler, 1999)	0.05

Note: Comparative Fit Index (CFI), Incremental Fit Index (IFI), Normed Fit Index (NFI), Tucker Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), Standardised Root Mean Square Residual (SRMR).

The assessment of scale items' convergent validity utilised Average Variance Extracted (AVE) (Fornell & Larcker, 1981). The obtained AVE values surpassed the threshold of 0.50 (Fornell & Larcker, 1981), affirming that the scales employed in this study meet the necessary criteria for convergent validity. Further details can be found in Table 4-4.

Discriminant validity in the study was evaluated following the criterion proposed by Fornell and Larcker (1981). The study demonstrated discriminant validity per this criterion since each construct's square root of the Average Variance Extracted (AVE) exceeded its correlation value with other constructs. For additional details, please refer to Table 4-3.

Table 4-3: Discriminant Validity

	BIU	EE	Ht	PE	PR	PT	PV	SI
BIU	**0,819**							
EE	0,298	**0,738**						
Ht	0,379	0,324	**0,832**					
PE	0,389	0,72	0,482	**0,791**				
PR	-0,403	0,03	-0,092	0,045	**0,727**			
PT	0,563	0,602	0,511	0,648	-0,286	**0,712**		
PV	-0,29	-0,142	-0,199	-0,252	0,427	-0,3	**0,679**	
SI	0,155	0,089	0,133	0,126	0,165	0,078	0,197	**0,746**

Table 4-4: Construct Validity and Reliability

Components	**Loadings**	C**ronbach's alpha**	CR	AVE
Performance Expectancy (PE)		0.856	0.869	0.626
PE1	0.737			
PE2	0.667			
PE3	0.882			
PE4	0.860			
Effort Expectancy (EE)		0.688	0.701	0.544
EE1	0.633			
EE3	0.829			
Perceived Trust (PT)		0.804	0.803	0.507
PT1	0.821			
PT2	0.721			
PT3	0.675			
PT4	0.615			
Perceived Risk (PR)		0.830	0.815	0.528
PR1	0.587			
PR2	0.673			
PR3	0.813			
PR5	0.809			
Price Value (PV)		0.815	0.807	0.461
PV1	0.600			
PV2	0.789			
PV3	0.778			
PV4	0.542			
PV5	0.651			
Social Influence (SI)		0.711	0.714	0.556
SI2	0.789			
SI3	0.700			
Habit (Ht)		0.853	0.869	0.693
Ht1	0.894			
Ht2	0.671			

Ht3	0.911			
Behavioural Intention to Use CLP (BIU)		0.899	0.890	0.671
BIU1	0.721			
BIU2	0.790			
BIU3	0.871			
BIU4	0.883			

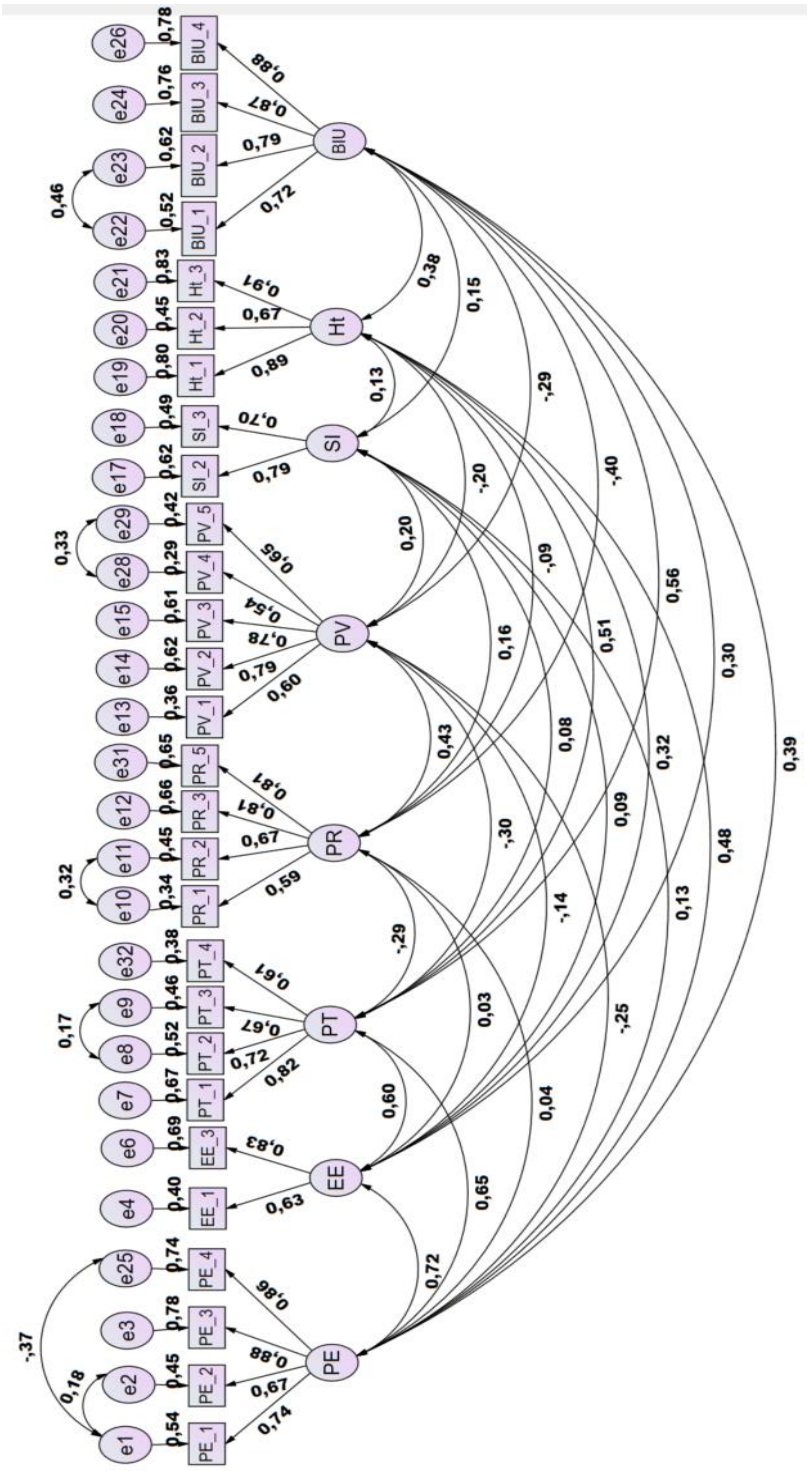

Figure 4-4: Measurement model. Note: Performance Expectancy (PE), Effort Efficiency (EE), Perceived Risk (PR), Perceived Trust (PT), Price Value (PV), Social Influence (SI), Habit (Ht), Behavioural Intention to Use (BIU)

4.4 Structural model and hypothesis testing

The coefficient of determination, indicating the squared multiple correlations for Behavioural Intention to use (BIU) cashless payments (CLP), was 0.430. This signifies that 43% of the variance in BIU is explained by PE, EE, PT, PR, PV, SI, and Ht, surpassing the minimum requirement of 10% as suggested by (Hair Jr et al., 2010). The study evaluated the influence of PE, EE, PT, PR, PV, SI, and Ht on consumers' behavioural intention to use CLP within South African informal markets. The results are outlined below:

- PE's impact on BIU was positive but not statistically significant (β = 0.146, t = 1.409, p = 0.159), thereby failing to support H3.
- EE's impact on BIU was negative and not statistically significant (β = -0.052, t = -0.510, p = 0.610), thereby failing to support H4.
- PT's impact on BIU was positive and highly significant (β = 0.338, t = 3.278, p <= 0.001), thereby supporting H2.
- PR's impact on BIU was negative and highly significant (β = -0.313, t = -4.045, p < 0.001), supporting H1.
- PV's impact on BIU was negative but not statistically significant (β = -0.038, t = -0.570, p = 0.569), thereby failing to support H5.
- SI's impact on BIU was positive and significant (β = 0.161, t = 2.466, p < 0.05), thereby supporting H6.
- Ht's impact on BIU was positive but not statistically significant (β = 0.094, t = 1.454, p = 0.146), thereby failing to support H7.

For more information, refer to Table 4-5.

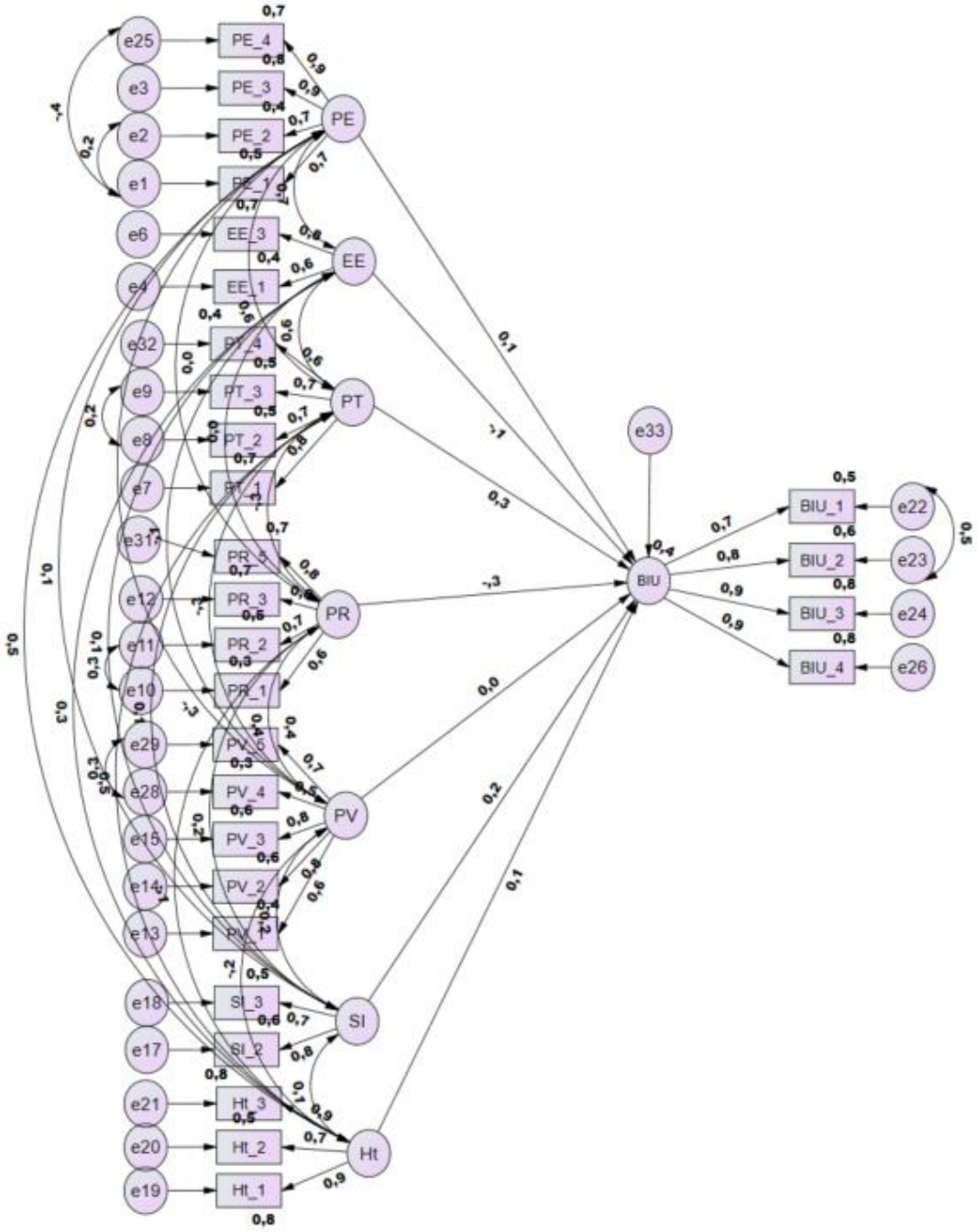

Figure 4-5: Structural model. Note: Performance Expectancy (PE), Effort Efficiency (EE), Perceived Risk (PR), Perceived Trust (PT), Price Value (PV), Social Influence (SI), Habit (Ht**),** Behavioural Intention to Use (BIU)

Table 4-5: Hypothesis testing results

Hypothesised Relationship	Standardised Estimate (β)	CR (t-values)	p-values	Decision
PE → BIU	0.146	1.409	0.159	Not supported
EE → BIU	-0.052	-0.510	0.610	Not supported
PT → BIU	0.338	3.278	< 0.05	Supported
PR → BIU	-0.313	-4.045	< 0.001	Supported
PV → BIU	-0.038	-0.570	0.569	Not supported
SI → BIU	0.161	2.466	< 0.05	Supported
Ht → BIU	0.094	1.454	0.146	Not supported

4.5 Chapter Summary

This chapter reported the model fitness, structural and hypothesis findings. Confirmatory Factor Analysis (CFA) was conducted using SPSS AMOS to examine the measurement models, which met the recommended requirements for PCMIN/df, GFI, CFI, TLI, SRMR, and RMSEA. Lastly, seven hypotheses of the study were tested, and only three (H1, H2, and H5) were found to meet the statistical significance for support, and the other four (H3, H4, H6, and H7) were rejected.

CHAPTER 5. DISCUSSION OF THE DATA RESULTS

5.1 Introduction

This section explores the data analysis outcomes concerning various concepts, emphasising both the similarities and differences identified between the study and prior literature. It links the findings with the objectives set in Chapter 1. The section is divided into segments discussing different concepts and their respective hypotheses. Additionally, the conclusion section connects the data findings with the objectives outlined in the first chapter of this research report.

5.2 Discussion of the results in relation to the hypotheses of the study

5.2.1 *Perceived Risk (PR) PR negatively impacts BIU CLP*

This study discovered a statistically significant negative correlation between Perceived Risk and the consumers' behavioural intention to use CLP, supporting the proposed H1. This discovery aligns with earlier investigations conducted by Raj et al. (2023), Neto and de Figueiredo (2022), and Zhao et al. (2019). It implies that potential users of CLP systems are mindful of the risks linked with these payment methods and are less inclined to partake in such transactions if they perceive the risks to be high. As a result, service providers should pinpoint the most critical risks that amplify users' apprehensions about using CLP for payments in informal markets. Additionally, conducting qualitative studies could further illuminate consumers' concerns about utilising CLP in informal markets.

In contrast, Al-Saedi et al. (2020) and Widyanto et al. (2022) reported an insignificant impact of Perceived Risk on consumers' behavioural intention to adopt cashless payment methods.

5.2.2 *Perceived Trust PT positively impacts BIU CLP*

This study revealed that Perceived Trust significantly and positively influences consumers' intentions to use cashless payments, confirming the study's second hypothesis (H2). This implies that to accept CLP methods to expand within South Africa's informal markets, consumers must trust not only the informal traders they transact with but also the specific cashless payment method used. It indicates that individuals' willingness to adopt CLP is connected to their perception of the reliability of such systems. Consequently, providers of CLP services should consistently work on establishing trust in their solutions to maintain favourable consumer confidence in CLP.

The impact of trust on consumers' intentions to adopt CLP has been extensively studied in the past, with most research findings suggesting a positive correlation between trust and consumers' inclination to use CLP (Lisana 2021; Widyanto et al. 2022; Patil et al. 2020; Saha et al. 2022). These findings align with the outcomes of this study.

5.2.3 *Perceived Efficiency (PE) PE positively BIU CLP*

This study discovered a positive yet statistically insignificant correlation between Perceived Efficiency and the behavioural intention to use cashless payments, which does not support the proposed H3. However, with $\beta = 0.199$, $t = 1.698$, and $p = 0.090$, the PE findings hover close to the p-value threshold ($p<0.05$) but do not breach it significantly. This indicates that South African consumers value the usefulness and efficiency of cashless payment technologies to some extent;

however, they do not consider it a highly influential factor in driving CLP adoption within informal markets.

In contrast, studies conducted by Raj et al. (2023), Al-Saedi et al. (2020), Santosa et al. (2021), Widyanto et al. (2022), Lu and Kosim (2022), and Saha and Kiran (2022) identified PE as a primary determinant influencing consumers' adoption of CLP. They reported a significant relationship between PE and consumers' intention to use CLP, suggesting that individuals are more likely to adopt and utilise CLP if they perceive that doing so will enhance their overall experiences. However, it is essential to note that these studies did not specifically focus on informal markets but assessed CLP adoption in both formal and informal settings.

5.2.4 *Effort Expectancy (EE) EE positively impacts BIU CLP*

This study found a negative and insignificant relationship between consumers' Effort Expectancy (EE) and the behavioural intention to use (BIU) cashless payments (CLP), which does not support the proposed H4. From consumers' perspective in South African informal markets, using CLP is perceived as requiring excessive effort, indicating that consumers find it more demanding to utilise CLP than opting for cash transactions. This perception might be influenced by the absence of convenient infrastructure in informal markets, leading consumers to perceive cash as a more effortless option than using CLP. In contrast, numerous other studies identified EE as a significant determinant in the adoption of CLP, suggesting that individuals are more inclined to adopt CLP when they find it convenient to use (Lu & Kosim, 2022; Neto & de Figueiredo, 2022; Raj et al., 2023; Saha et al., 2022).

As highlighted in the descriptive statistics in chapter 4 of this report, 99% of the respondents are familiar with CLP methods, indicating that they possess the necessary skills to use CLP. Therefore, self-efficacy might not act as a barrier to adoption but rather the need for more convenient infrastructure. This underscores

the importance for CLP service providers to concentrate on developing solutions that offer consumer convenience tailored explicitly for the informal markets.

5.2.5 *Social Influence (SI) SI positively impacts BIU CLP*

This study discovered a positive and significant correlation between Social Influence (SI) and the behavioural intention to use (BIU) cashless payments (CLP), supporting the proposed H5. SI plays a beneficial role in shaping an individual's intention to use CLP. This outcome aligns with previous research conducted by scholars such as Al-Saedi et al. (2020), Santosa et al. (2021), Raj et al. (2023), Lu and Kosim (2022), Saha and Kiran (2022), Singh and Srivastava (2020), and Widyanto et al. (2022). Their studies suggest that individuals are motivated to adopt CLP because they perceive support for the use of CLP within their social circles, including family, acquaintances, and the local community. Essentially, individuals believe their family members believe everyone should utilise CLP. However, Venkatesh et al. (2012) opposes the findings of this study, as they found that SI does not significantly influence consumers' behavioural intention to adopt CLP.

5.2.6 *Price Value PV negatively impacts BIU CLP*

This study revealed a negative and statistically insignificant correlation between Price Value (PV) and the behavioural intention to use (BIU) cashless payments (CLP), which does not support the proposed H6. These findings align with studies conducted by Sleiman et al. (2022). They suggest that although consumers perceive the cost of using CLP as necessary, it does not significantly hinder their full adoption of CLP in informal markets. Considering that South Africa's formal market demonstrates a reasonable rate of CLP adoption and that CLP service providers apply uniform transaction costs across markets, it is understandable why consumers do not view PV as a barrier in informal markets.

However, these findings contradict some earlier research studies by Raj et al. (2023), Santosa et al. (2021), and Al-Saedi et al. (2020), who found that price value exerts a significant negative impact on consumers' behavioural intention to use cashless payments. This implies that the adoption of CLP might decrease due to increased costs associated with using CLP.

5.2.7 *Habit positively impacts BIU CLP*

Furthermore, this study determined that habit does not significantly influence consumers' behavioural intention to use cashless payment methods within South African informal markets. This finding does not support the study's seventh hypothesis (H7), which stated that habit has a noteworthy impact on behavioural intention to use cashless payments. This indicates that South African consumers do not perceive themselves as having a habitual or autonomous reliance on using CLP while purchasing from informal traders. Consumers view cashless payments as something other than integral to their daily routines when utilising these methods in informal markets. This lack of autonomous behaviour might stem from the infrequent use of CLP among consumers in informal markets, which corresponds with the previously identified negative significant influences of barrier factors, i.e., Perceived Risk (PR) and Perceived Trust (PT). The study's outcome suggests that consumers need to utilise cashless payments more frequently in informal markets in order for it to become a habitual behaviour.

Contrarily, studies conducted by Santosa et al. (2021) and Chauhan et al. (2022) have reported that continuous usage of digital payment transactions becomes habitual and fosters dependency. However, it is crucial to note that these studies were conducted in formal markets where barrier factors such as security risks do not have as much influence as informal ones.

5.3 Discussions of the results in relation to the research objectives

Objective 1: Assess factors influencing consumers' intention to adopt cashless payments in informal markets.

Objective 1 of this study was to evaluate seven factors, PT, PR, PE, EE, PV, SI, and Ht, illustrated in the structural model diagram in Figure 4 above, and their respective significance in influencing consumers' decisions to adopt cashless payments. All seven factors underwent comprehensive hypothesis testing from one to seven to achieve this objective. Three hypotheses were substantiated, as detailed in Table 4.5. The investigation determined that PT, PR, and SI significantly influence BIU CLP in the informal market. Conversely, the hypotheses for the remaining factors (PE, EE, PV, and Ht) were not substantiated, indicating their negligible impact on customers' behaviour when embracing CLP for acquiring goods and services from informal traders (see Table 4.5).

The findings imply that consumers in informal markets are inclined to employ cashless payments when they place trust in both the technology of the payment method and the merchant from whom they are making purchases; these views are aligned with findings from previous literature by Al-Saedi et al. (2020), Kaur et al. (2021), Ananda et al. (2020), Sarmah et al. (2021), and Widyanto et al. (2022). Conversely, a lack of trust is a substantial impediment, leading consumers to prefer physical cash as their primary payment method.

Perceived Risk is like trust; customers are less likely to adopt CLP payment technology if they perceive a high risk associated with cashless payments. The practical implication of these findings underscores the necessity for service providers (e.g., SA retail banks, Apple Pay, Google Pay, MTN MoMo, Samsung Pay, etc.), the South African government, and the SA Reserve Bank to raise awareness and alter consumer perceptions regarding the safety of cashless

payments across various mediums (debit cards, credit cards, digital cards, electronic payments, mobile money, e-wallets, etc.).

Objective 2: Assess the impact of perceived risk (safety and privacy), trust, and cost barriers on consumers' behavioural intention to use cashless payments for purchasing goods and services in the informal market.

Objective 2 was to evaluate the factors perceived as barriers or inhibitors that could prevent consumers from adopting cashless payments in the informal markets. The study found that PT and PR are the top factors influencing consumers' behavioural intention to adopt cashless payments in the informal markets. This indicates that in South Africa, informal market consumers are worried about the risk of utilising CLP, and they do not trust that CLP methods are secure enough to protect their money and their data. The findings suggest that the consumer's concern regarding their perceived high risk and low trust in using CLP in the informal sector outweighs the benefits of using the CLP methods, resulting in low adoption of the CLP and continued preference for physical cash in the informal markets.

However, the study found that PV (as one of the perceived barriers) has an insignificant influence ($\beta = -0.039$, $t = -0.552$, $p = 0.581$) towards consumers' behavioural intention to use CLP. The finding indicates that consumers do not consider the cost of using CLP in informal markets to influence their payment preference while transacting.

Objective 3: Determine which factors between barriers (Perceived Risk, Perceived Trust, and Price Value) and drivers (Performance Expectancy,

Effort Expectancy, Social Influence, and Habit) exert a more significant influence on the behavioural intention to adopt cashless payments.

Objective 3 of this study was to evaluate seven factors, PT, PR, PE, EE, PV, SI, and Ht, when we group them into barriers and drivers. The results reported that perceived risk and trust show a statistically significant impact on adopting cashless payments in the informal sector. Social influence also has a solid significant influence on adopting cashless payment. However, performance expectancy, effort expectancy, price value and habit showed statistically insignificant impacts on adopting cashless payment in the informal sector. The study found that barriers (PT, PR, and PV) have a more significant relationship with CLP than the drivers (PE, EE, SI, and Ht). This result reveals that in the informal market set-up, the adoption of the cashless payment methods is more influenced by the barriers than the drivers; consumers are more concerned with the security, safety, and perceived trust of these CLP methods than the ease of use, and the convenience that the technologies bring.

5.4 Chapter Summary

Based on the findings, Perceived Risk, Perceived Trust, and Social Influence have emerged as statistically significant factors influencing consumers' behavioural intention to utilise cashless payment methods when purchasing goods and services from informal traders, including street vendors, spaza shops, street hawkers, and similar vendors. Other factors examined in the study (PE, EE, PV, and Ht) were found to have an insignificant relationship with BIU CLP. This outcome suggests that consumers' primary concerns revolve around the safety aspects of using CLP in informal markets, prioritising these over considerations such as usefulness and technological efficiency. Additionally, Social Influence is identified as another influential factor associated with BIU CLP. This indicates that consumers may be more inclined to adopt CLP if their family and friends endorse its safety and reliability within informal markets.

Consequently, service providers should consider leveraging celebrities and trusted community figures to promote a positive narrative regarding the security of CLP methods. This approach aims to diminish perceived risk and enhance trust surrounding the use of CLP within informal markets.

CHAPTER 6. CONCLUSION

6.1 Introduction

This chapter concludes the research report by addressing the implications derived from the empirical findings. It begins by summarising the outcomes related to the research objectives and then proceeds to discuss the findings' theoretical and practical implications. Finally, the chapter suggests potential areas for future research based on the uncovered insights and the acknowledged limitations identified during the study.

6.2 Conclusions

This section looks at the research objectives and their outcome.

6.2.1 *Conclusion related to Objective 1*

Objective 1 of the study aimed to assess the significance of seven factors (PT, PR, PE, EE, PV, SI, and Ht) influencing consumers' decisions to adopt cashless payments in the informal market. Through comprehensive hypothesis testing, three hypotheses were confirmed, indicating that PT, PR, and SI significantly influence consumers' behavioural intention to use cashless payment (BIU CLP) in informal markets. Conversely, the hypotheses for the remaining factors (PE, EE, PV, and Ht) were not supported, suggesting their limited impact on consumer behaviour in embracing cashless payments for transactions with informal traders. The findings indicate that trust in payment technology and the merchant is crucial for adopting cashless payment. In contrast, a lack of trust is a significant barrier, leading consumers to prefer physical cash. PR, like PT, influences adoption, with higher perceived risk associated with cashless payments leading to lower adoption. The practical implication underscores the need for service providers, the South African government, and the Reserve Bank to raise awareness and

reshape consumer perceptions regarding the safety of various cashless payment methods.

6.2.2 *Conclusion related to Objective 2*

Objective 2 of the study aimed to assess factors perceived as barriers to adopting cashless payments in informal markets. The research identified PT and PR as the primary factors influencing consumers' behavioural intention to adopt cashless payments in South African informal markets. This suggests that consumers in these markets are apprehensive about the perceived risk of using cashless payment methods and need more trust in their security. The findings imply that these concerns regarding high risk and low trust outweigh the perceived benefits of cashless payments, leading to low adoption and a continued preference for physical cash in informal markets.

Notably, this current study revealed that the perceived cost (Price Value) of using cashless payment methods had an insignificant influence on consumers' behavioural intention, indicating that cost considerations do not play a significant role in shaping payment preferences during transactions in informal markets.

6.2.3 *Conclusion related to Objective 3*

Objective 3 of the study aimed to assess the impact of seven factors (PT, PR, PE, EE, PV, SI, and Ht) when categorised as barriers and drivers of adopting cashless payments in the informal sector. The findings indicated that perceived risk and perceived trust significantly and strongly influenced the adoption of cashless payments, with social influence also demonstrating a notable impact. Conversely, performance expectancy, effort expectancy, price value, and habit showed statistically insignificant effects on cashless payment adoption in the informal sector. The study revealed that barriers (PT, PR, and PV) had a more substantial relationship with cashless payment adoption than drivers (PE, EE, SI,

and Ht). This suggests that in the informal market setup, the adoption of cashless payment methods is more influenced by security, safety, and perceived trust concerns than by factors such as ease of use and convenience offered by the technologies. Consumers in this context prioritise overcoming barriers rather than responding to drivers in their adoption decisions. This explains the stagnant rate of CLP adoption in the informal sector regardless of the plethora of CLP methods available for customers. CLPs are digital, and digital solutions are vulnerable to cybercrime.

6.3 Theoretical Implications

The theoretical implications of this research are noteworthy, as the empirical findings contribute significantly to both theory and practical applications. Specifically, this study expands and applies the UTAUT2 model to analyse the factors influencing the adoption of cashless payments in South Africa's informal sector. By supporting and validating the UTAUT2 model, the research substantially contributes to existing theory, shedding light on consumers' intentions to adopt cashless payments in developing economies like South Africa, particularly within the informal sector. An extension of the UTAUT2 model has been introduced, incorporating additional constructs related to user security and privacy, specifically perceived risk and perceived trust. This augmentation enhances the predictive power of UTAUT2 in assessing consumers' behavioural intentions to adopt cashless payments, especially within the informal sector of a developing country.

6.4 Practical Implications

Financial service providers must tailor their offerings to diverse markets and merchant types, recognising that payment solutions suitable for large retailers may not meet the needs of micro, small, and informal traders. Cashless payments, leveraging the widespread availability of smartphones even in rural

areas, have the potential to bridge the digital divide. However, this study reveals that safety and privacy concerns outweigh efficiency and usefulness considerations in the informal sector. Consumers, fearing cyberattacks, /express apprehension about potential scams or hacks during POS transactions, leading them to prefer traditional options such as cash.

Service providers, policymakers, and merchants should emphasise the security and privacy controls surrounding these payment systems to promote the adoption of cashless payment methods in the informal sector. Addressing safety and privacy concerns is crucial for building consumer trust and encouraging widespread adoption. The study highlights that perceived risk (PR) and perceived trust (PT) are significant consumer concerns, aligning with findings from recent research.

This study recommends that, for financial service providers and cashless payments technology developers to enhance the security features of their digital payment platforms, the service providers should adopt trust-building measures and implement efficient customer service channels to manage customer complaints properly and promptly. Secondly, to advance cashless payment adoption in South Africa, collaboration between the South African Reserve Bank, financial providers, retailers (both large and small), and formal and informal traders is recommended.

Finally, training and awareness initiatives can reassure consumers about protecting the money in their accounts and their personal and financial information privacy. Communication methods such as radio, television, social media, advertising boards, and point-of-payment demonstrations by traders could be employed to educate consumers and allow them to experience the technology firsthand. While current cybercrime campaigns emphasise the risks, they need to demonstrate the safety measures and financial assurances in place for users of these technologies.

6.5 Suggestions for further studies

This study is subject to certain limitations as it exclusively examines the relationship between independent and dependent variables. Future research endeavours could expand on this by incorporating mediating and moderating factors, such as gender and age, to assess their influence on consumers' adoption of cashless payment (CLP). The study utilised quantitative research methodology, which has the advantage of generalising findings to a broader population. However, it does risk oversimplifying intricate social phenomena and overlooking individual consumer experiences and behaviours. Therefore, future research should also incorporate a qualitative approach, enabling a thorough examination of complex phenomena. This approach may yield detailed insights, facilitating a deeper understanding of the perceptions underlying consumer behaviours and experiences regarding adopting CLP within informal markets.

While the survey was distributed across all nine provinces in South Africa in this study, more than 70% of respondents were from Gauteng, primarily from urban areas. Hence, future research could deliberately focus on underrepresented rural provinces such as KZN, Eastern Cape, Limpopo, Northern Cape, etc. It is essential to note that a cashless economy may require more focus in rural areas where adoption rates are lower due to a reliance on cash and lower financial literacy levels compared to their urban counterparts. Additionally, a qualitative study can be performed to understand the actual underlying concerns of the consumers regarding the security, safety, and privacy of cashless payment technologies and why the consumers perceive these safety and security controls to be more vulnerable in the informal sector setup compared to the mainstream retailers.

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Appendix

Appendix A: Ethics Clearance Certificate

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

Ethics Clearance Certificate

Ethics protocol number: WBS/DB0403921T/129
This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below).
This certificate is only valid if permission has been granted by the Registrar's Office of Wits University.

Project title	The barriers to adoption of a cashless economy in South African informal markets: a consumer`s perspective
Investigator / Researcher	Mr Lutendo Nndwakhulu Gandamipfa
Nature of Project	MM (Digital Business)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed anonymity and confidentiality.
Issue Date of Certificate	26 08 2023
Expiry date	Date of submission of the project / research report
Chairperson	Dr Pius Oba ☎ +27 11 717 3976 +27 82 733 6587 pius.oba@wits.ac.za

Declaration by Researcher

One copy must be signed by the Researcher and returned to the Chairperson of the Wits Business School Ethics Committee.

I fully understand the conditions under which I am 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 undertake to resubmit the protocol to the Committee.

Signature _____ Date: _____

Appendix B: Turnitin Report

Research Report MMDB 2024 LN Gandamipfa 0403921T.docx

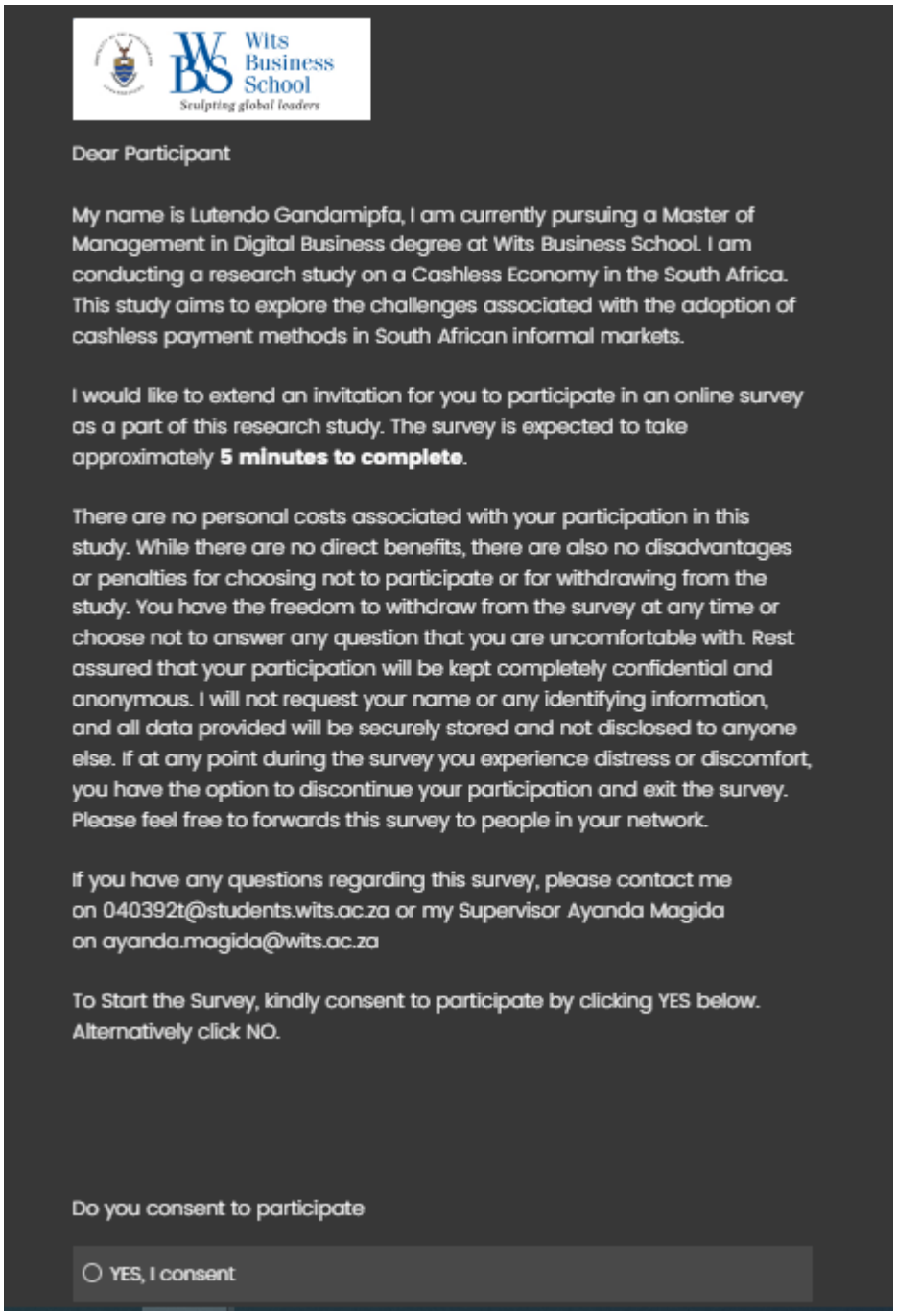
ORIGINALITY REPORT

3%	4%	5%	%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.ncbi.nlm.nih.gov Internet Source	1%
2	wiredspace.wits.ac.za Internet Source	1%
3	ujcontent.uj.ac.za Internet Source	1%
4	www.noveltyjournals.com Internet Source	<1%
5	Mahfuzur Rahman, Izlin Ismail, Shamshul Bahri. "Analysing consumer adoption of cashless payment in Malaysia", Digital Business, 2020 Publication	<1%
6	www2.mdpi.com Internet Source	<1%

Appendix C: Online Survey Screenshots



Wits Business School
Sculpting global leaders

Dear Participant

My name is Lutendo Gandamipfa, I am currently pursuing a Master of Management in Digital Business degree at Wits Business School. I am conducting a research study on a Cashless Economy in the South Africa. This study aims to explore the challenges associated with the adoption of cashless payment methods in South African informal markets.

I would like to extend an invitation for you to participate in an online survey as a part of this research study. The survey is expected to take approximately **5 minutes to complete**.

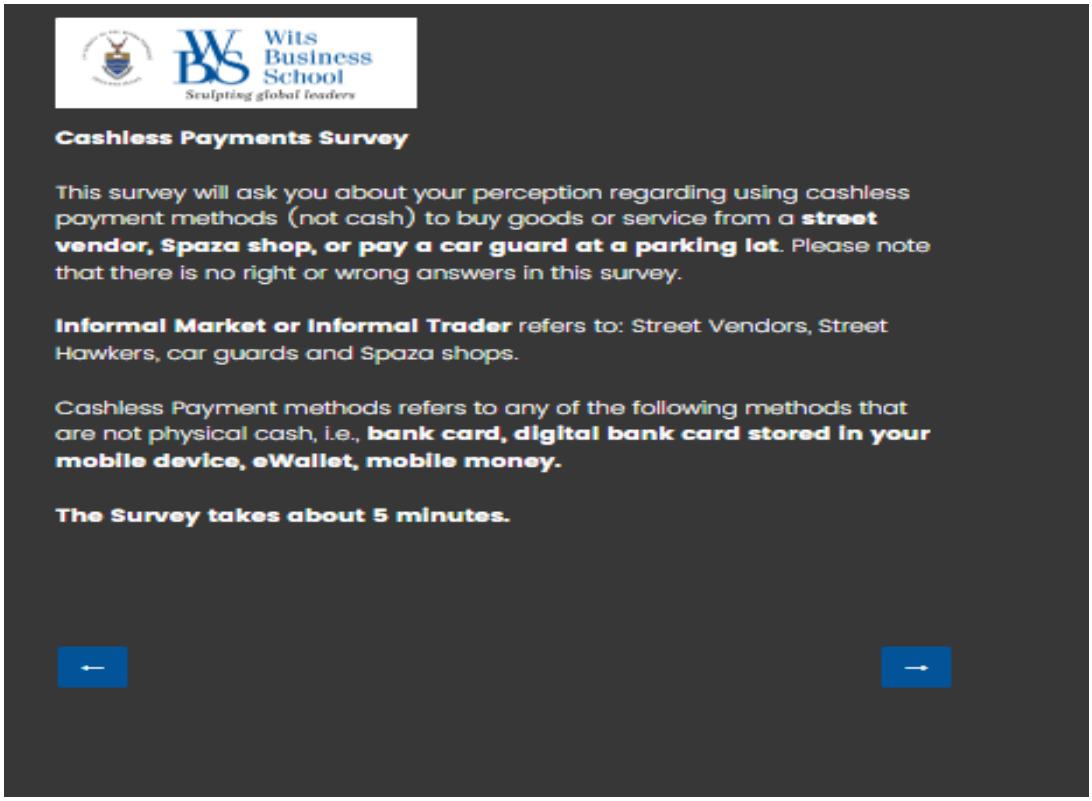
There are no personal costs associated with your participation in this study. While there are no direct benefits, there are also no disadvantages or penalties for choosing not to participate or for withdrawing from the study. You have the freedom to withdraw from the survey at any time or choose not to answer any question that you are uncomfortable with. Rest assured that your participation will be kept completely confidential and anonymous. I will not request your name or any identifying information, and all data provided will be securely stored and not disclosed to anyone else. If at any point during the survey you experience distress or discomfort, you have the option to discontinue your participation and exit the survey. Please feel free to forwards this survey to people in your network.

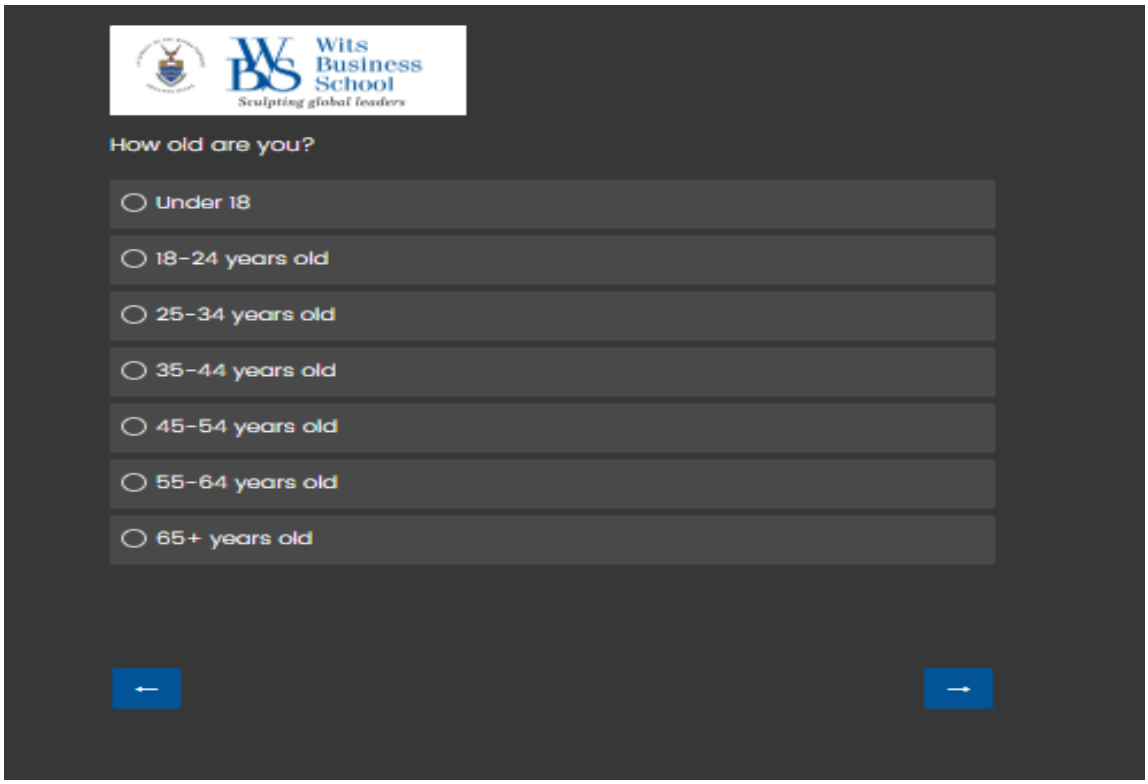
If you have any questions regarding this survey, please contact me on 040392t@students.wits.ac.za or my Supervisor Ayanda Magida on ayanda.magida@wits.ac.za

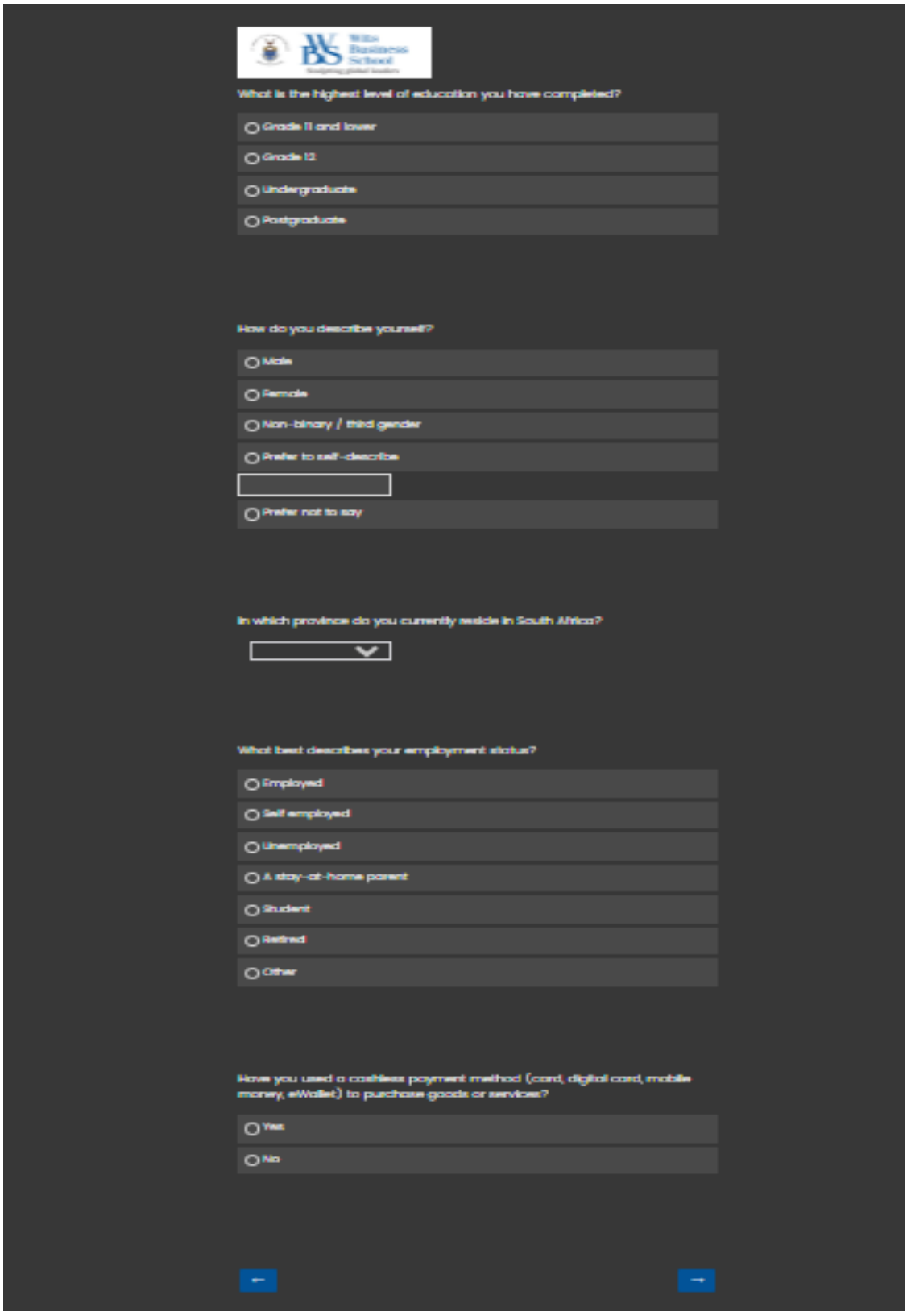
To Start the Survey, kindly consent to participate by clicking YES below. Alternatively click NO.

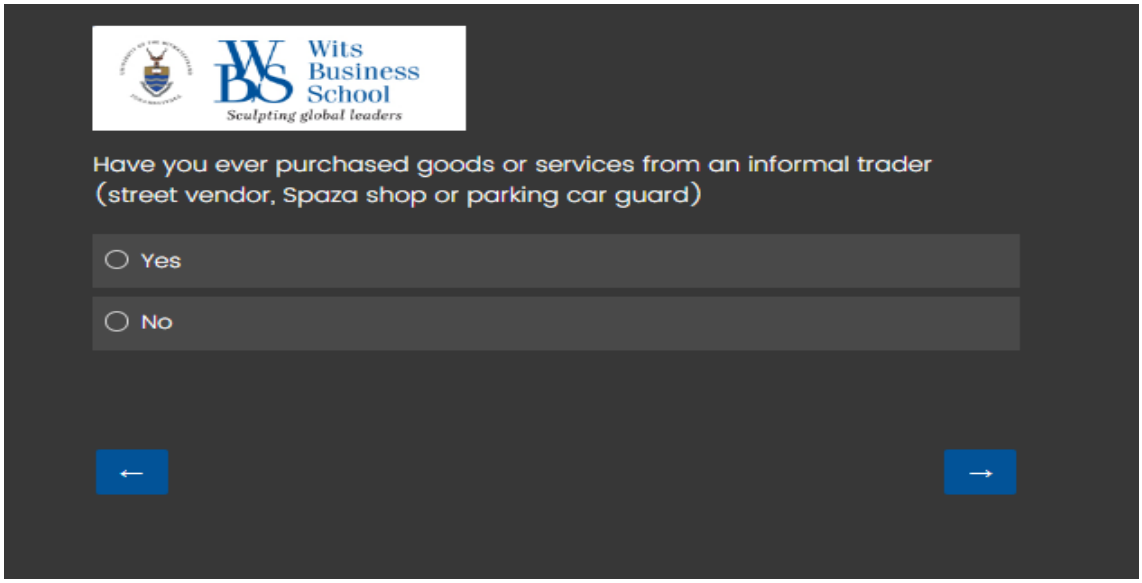
Do you consent to participate

○ YES, I consent


Wits Business School
Sculpting global leaders
Cashless Payments Survey
This survey will ask you about your perception regarding using cashless payment methods (not cash) to buy goods or service from a street vendor, Spaza shop, or pay a car guard at a parking lot. Please note that there is no right or wrong answers in this survey.
Informal Market or Informal Trader refers to: Street Vendors, Street Hawkers, car guards and Spaza shops.
Cashless Payment methods refers to any of the following methods that are not physical cash, i.e., bank card, digital bank card stored in your mobile device, eWallet, mobile money.
The Survey takes about 5 minutes.
←
→


Wits Business School
Sculpting global leaders
How old are you?
Under 18
18-24 years old
25-34 years old
35-44 years old
45-54 years old
55-64 years old
65+ years old
←
→


What is the highest level of education you have completed?
Grade 11 and lower
Grade 12
Undergraduate
Postgraduate
How do you describe yourself?
Male
Female
Non-binary / third gender
Prefer to self-describe
Prefer not to say
In which province do you currently reside in South Africa?
What best describes your employment status?
Employed
Self employed
Unemployed
A stay-at-home parent
Student
Retired
Other
Have you used a cashless payment method (card, digital card, mobile money, eWallet) to purchase goods or services?
Yes
No


Wits Business School
Sculpting global leaders
Have you ever purchased goods or services from an informal trader (street vendor, Spaza shop or parking car guard)
Yes
No
←
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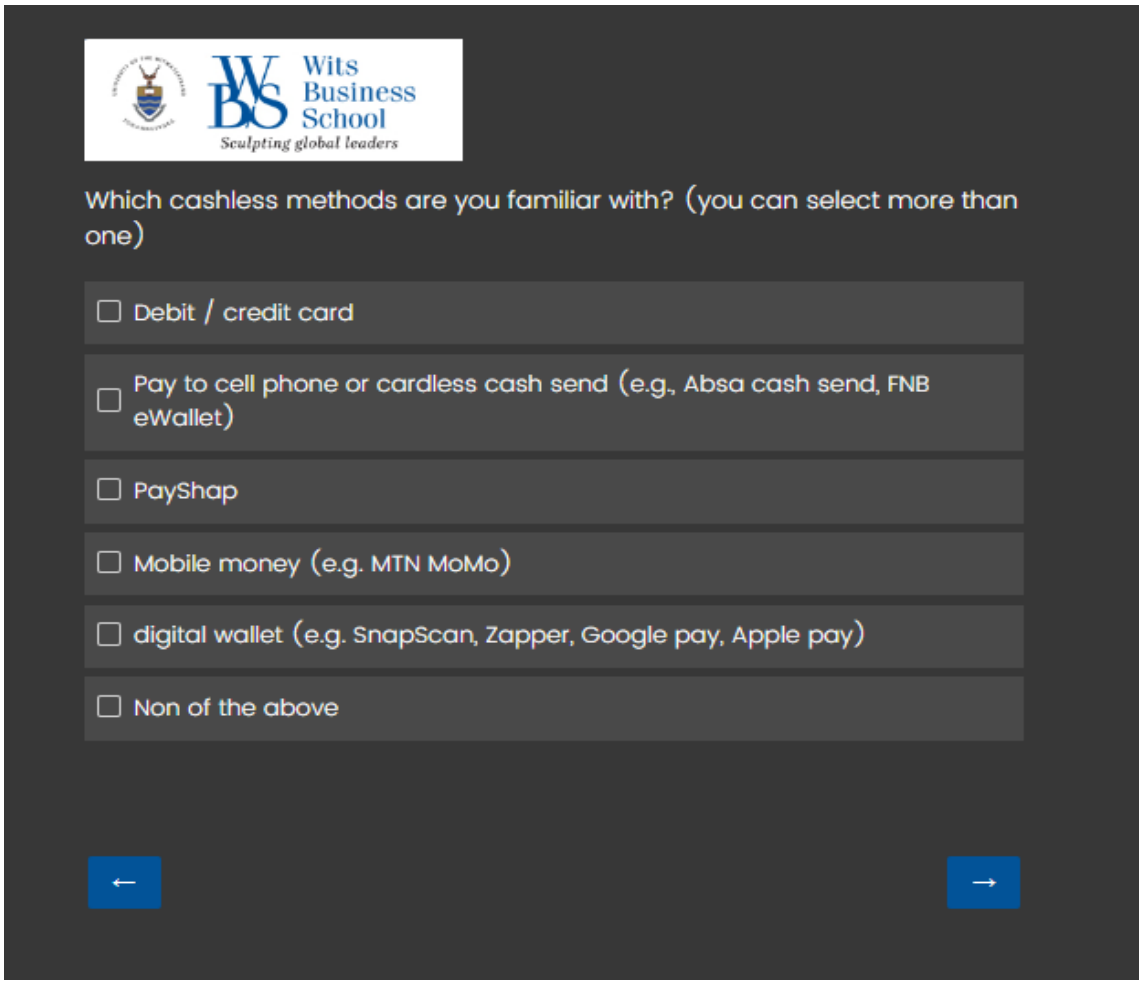
Wits Business School
Sculpting global leaders
Which cashless methods are you familiar with? (you can select more than one)
Debit / credit card
Pay to cell phone or cardless cash send (e.g., Absa cash send, FNB eWallet)
PayShap
Mobile money (e.g. MTN MoMo)
digital wallet (e.g. SnapScan, Zapper, Google pay, Apple pay)
Non of the above
←
→


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Sculpting global leaders
To what extent do you agree or disagree with the following statements about paying for goods or services from a street vendor or spaza shop using a cashless payment method?
Strongly disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Strongly agree
I think using cashless payment saves me time
I think by using cashless payment, I can fulfil the payment from anywhere, all the time
I think cashless payment services suites my lifestyle
I find cashless payment to be useful methods of payments
←
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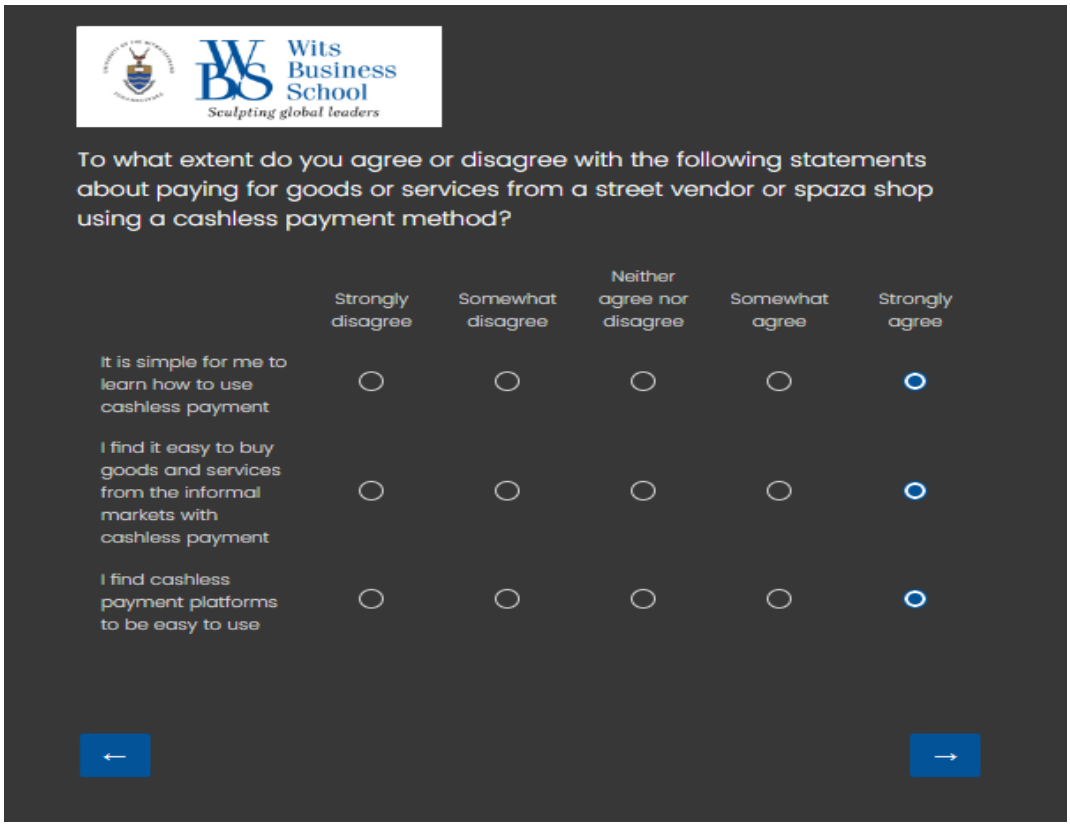
Wits Business School
Sculpting global leaders
To what extent do you agree or disagree with the following statements about paying for goods or services from a street vendor or spaza shop using a cashless payment method?
Strongly disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Strongly agree
It is simple for me to learn how to use cashless payment
I find it easy to buy goods and services from the informal markets with cashless payment
I find cashless payment platforms to be easy to use
←
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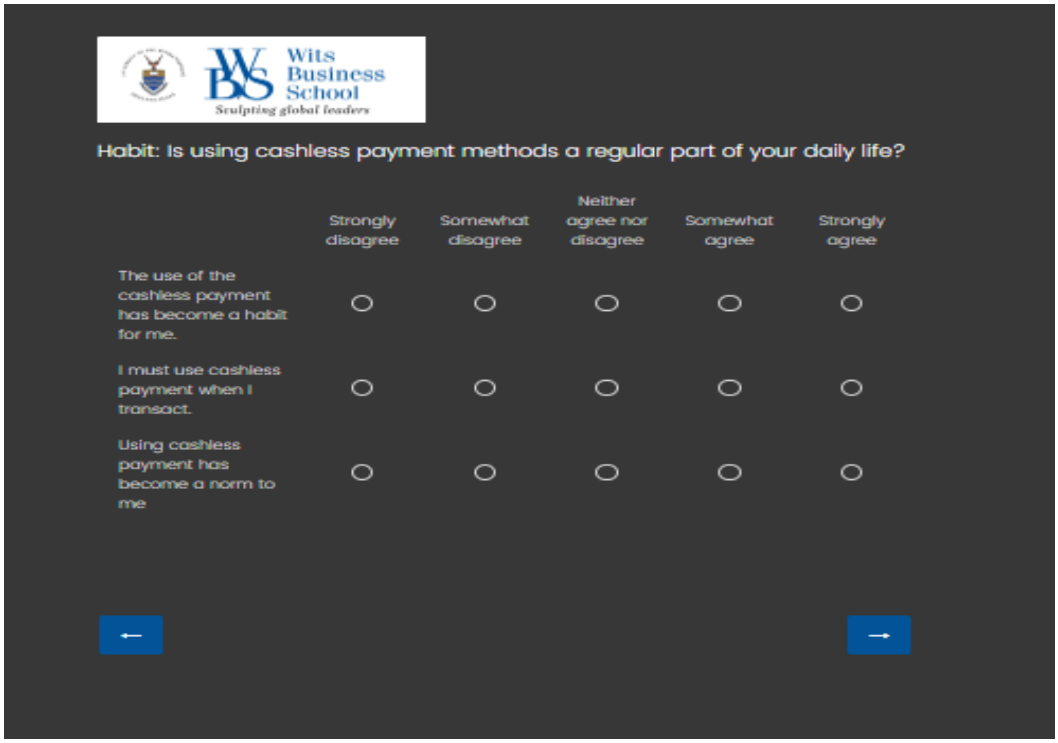
Wits Business School
Sculpting global leaders
Habit: Is using cashless payment methods a regular part of your daily life?
Strongly disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Strongly agree
The use of the cashless payment has become a habit for me.
I must use cashless payment when I transact.
Using cashless payment has become a norm to me
←
→



To what extent do you agree or disagree with the following statements about paying for goods or services from a street vendor or spaza shop using a cashless payment method?

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I believe cashless payments are trustworthy	○	○	○	○	○
I believe that my money is secure while I am paying with a cashless payment method in the informal markets	○	○	○	○	○
I trust that cashless payment providers (e.g. banks) ensures the security of their cashless payment services	○	○	○	○	○
I trust that cashless payment methods usually has internet connectivity in my area	○	○	○	○	○
I trust that cashless payment providers (e.g. banks) offers honest financial services	○	○	○	○	○



To what extent do you agree or disagree with the following statements about paying for goods or services from a street vendor or spaza shop using a cashless payment method?

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Using cashless payment methods in the informal markets raises privacy concerns for me	○	○	○	○	○
I have concerns about unauthorized recording of my financial information when using cashless payment methods in the informal market	○	○	○	○	○
I am worried about unlawful people taking my cashless payment device and password when transacting in the informal market	○	○	○	○	○
I think unlawful people could get access to my bank account if I use cashless payment methods in the informal market	○	○	○	○	○
I am afraid that my cashless payment account can be hacked if I transact in the informal market	○	○	○	○	○

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To what extent do you agree or disagree with the following statements about paying for goods or services from a street vendor or spaza shop using a cashless payment method?

	strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I believe that using cashless payment is expensive because it requires an expensive device	○	○	○	○	○
I believe that using cashless payment is expensive because of transaction costs charged by cashless payment providers	○	○	○	○	○
I believe that using cashless payment raises the overall cost of buying goods and services in the informal markets	○	○	○	○	○
I believe that informal traders add an extra charge to customers who pay with cashless payment	○	○	○	○	○
I believe that the total cost of paying with cashless payment is greater than the cost of paying with cash	○	○	○	○	○

←

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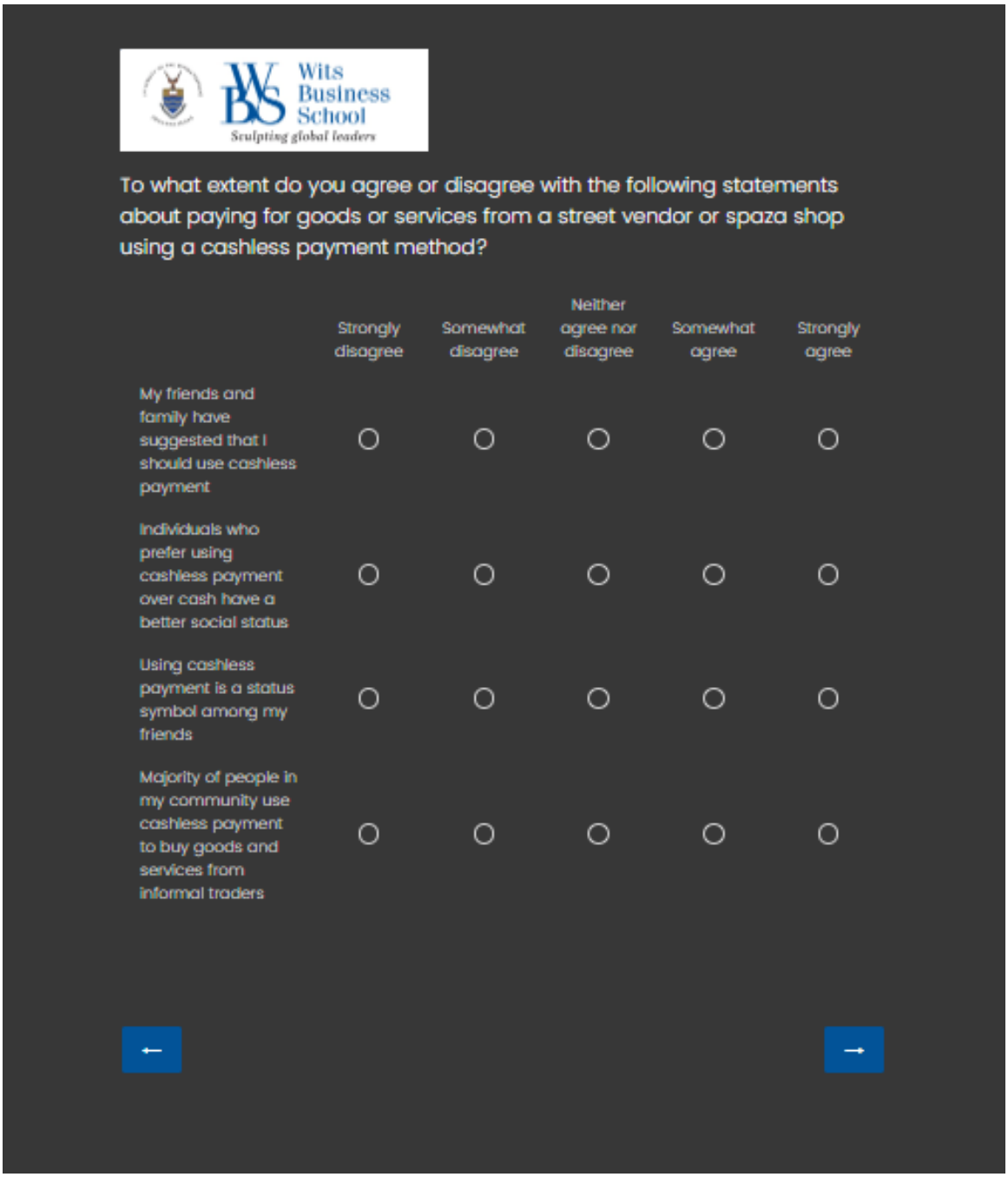
Wits Business School
Sculpting global leaders
To what extent do you agree or disagree with the following statements about paying for goods or services from a street vendor or spaza shop using a cashless payment method?
Strongly disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Strongly agree
My friends and family have suggested that I should use cashless payment
Individuals who prefer using cashless payment over cash have a better social status
Using cashless payment is a status symbol among my friends
Majority of people in my community use cashless payment to buy goods and services from informal traders



To what extent do you agree or disagree with the following statements about paying for goods or services from a street vendor or spaza shop using a cashless payment method?

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I intend to use or continue using cashless payment to buy goods/service in the informal markets	○	○	○	○	○
I intend to increase the frequency of paying with cashless payment in the informal markets	○	○	○	○	○
When I buy goods/services from the informal markets, I prefer paying with cashless payment over physical cash	○	○	○	○	○
I would recommend a friend or a family member to use cashless payment methods to purchase goods/service from the informal markets	○	○	○	○	○






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End of the Survey
We thank you for taking your time to participate in this survey.
Your response has been succefully recorded.
If you have any concerns or complaints regarding the ethical procedures of this study, please feel free to contact the University Human Research Ethics
Committee (Non-Medical) at telephone number +27(0) 11 717 1408 or via email at