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Factors that impact the adoption of real-time electronic payments in South Africa

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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

Johannesburg, 2025

ABSTRACT

The continuous advancement of digital technologies has heightened expectations for cost-effective and convenient service delivery, driving modernisation efforts in financial systems worldwide. In South Africa, the push to develop the national payments system has intensified, with a strong focus on reducing cash usage and fostering the adoption of real-time electronic payments. This qualitative study investigates the factors impacting the adoption of real-time electronic payments in South Africa through semi-structured interviews with experts from the payments industry, regulatory bodies, and financial institutions. Thematic analysis was employed to analyse the data, with the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Technology-Organisation-Environment (TOE) models serving as theoretical frameworks.

Findings reveal a complex interplay of drivers and barriers shaping adoption. Key enablers include the need for a more assertive regulatory approach, reduced transaction and infrastructure costs, an improved user experience, and greater fintech participation. Conversely, challenges such as entrenched cash reliance, fragmented stakeholder collaboration, and the absence of widespread, seamless payment solutions hinder adoption. A critical insight from this study is the necessity of replicating cash's convenience and ubiquity to drive consumer and merchant adoption. The interconnected nature of these factors underscores the importance of industry-wide collaboration to enact meaningful change.

By identifying these critical considerations, this research contributes to the ongoing discourse on digital payment transformation in emerging markets. The findings offer practical recommendations for regulators, financial service providers, and fintechs to accelerate the adoption of real-time electronic payments and promote a more inclusive, efficient financial ecosystem in South Africa.

KEYWORDS

Real-time payments, adoption, enablers, barriers, strategies

DECLARATION

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

Name: Rushana Pillay Signature: 

Signed at ……Bryanston, Johannesburg……

On the …25th…… day of ……February…… 2025…..

DEDICATION

I dedicate this research to my family, whose unwavering support and encouragement have been instrumental in shaping my journey. Their belief in me has been a constant source of motivation, and I would not be where I am today without them.

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I would like to express my sincere gratitude to my supervisor, Dr Kiru Pillay, for his invaluable guidance and continuous feedback throughout this research. His insights and expertise have been pivotal in shaping this study and contributing to my academic growth.

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LIST OF ACRONYMS

Acronym	Term
ACH	Automated clearing house
NPCI	National Payments Corporation of India
NPS	National Payment System
PSP	Payments Service Provider
RTC	Real-time clearing
SARB	South African Reserve Bank
TOE Framework	Technology – Organisation – Environment Framework
UPI	Unified Payments Interface
UTAUT	Unified Theory of Acceptance and Use of Technology

Table 1: List of Acronyms

RESPONDENT PROFILES

Respondent	Profile
Participant A	Retail bank executive
Participant B	Digital payments expert and board member
Participant C	ACH executive
Participant D	ACH executive
Participant E	Retail bank payments expert
Participant F	Retail bank executive
Participant G	Payment's regulator
Participant H	Payment's regulator
Participant I	Retail bank executive
Participant J	Payment's regulator
Participant K	Real-time payments executive

Table 2: Respondent Profiles

CHAPTER 1. INTRODUCTION

1.1 Statement of purpose

This qualitative study investigates the factors that impact the adoption of real-time electronic payments in South Africa.

1.2 Background of the study

The evolution of digital technologies has created the expectation for convenient and efficient service delivery across multiple industries. Within the financial services sector, the development of real-time payment clearing systems, increasing smartphone penetration, and varying digital payment channels have increased the efficacy of how transactions are carried out globally (Khando et al., 2022).

A major aspect of digitalisation within the financial services industry lies in the payments sector. Digital payment services are perceived as a viable economic activity that benefits businesses and consumers by offering an easy and secure means of completing financial transactions (Sahi et al., 2021). The emergence of financial technology applications and cost-effective payment channels enables consumers and businesses to move beyond the conventional cash-based payment system, paving the way for inclusive digital financial services (Khando et al., 2022).

Electronic payments (also known as digital payments, e-payments, or electronic payment systems) refer to the transfer of value from one payment account to another using a digital device such as a mobile phone, computer or point of sale (POS) device as well as a digital communication channel such as mobile wireless data or SWIFT (Pandey, 2022, p. 10121). Electronic payment types include e-wallets, (Ramli & Hamzah, 2021), mobile payment services (Kar, 2021), card payments and bank transfers (Khando et al., 2022). Electronic payments may

also refer to transactions that take place via the internet as well as payments made through cryptocurrencies and are often defined by the ability to complete a financial transaction without the physical exchange of cash (Khando et al., 2022, p. 2).

Although the use of electronic payments is on the rise, a significant portion of South African consumers still depend heavily on cash. According to a study by the Boston Consulting Group, only 14% of South African consumers are willing to transition to a completely cashless system (Boston Consulting Group, 2022). In addition, the South African Reserve Bank (2022) highlights the over-reliance on cash as a payment method by those in underserved communities, particularly in the lower and middle living standards measure (LSM) market segments. As a result, various strategies have been employed to remove obstacles associated with adopting and enabling electronic payment systems to spur economic activity and growth.(South African Reserve Bank, 2024).

The evolution of digital technologies has enabled the development of real-time payments which have garnered attention as an electronic alternative to decrease the reliance on cash (Pandey, 2022). Real-time payments, also known as ‘faster’ or ‘instant’ payments, are defined by the South African Reserve Bank (2022) as a credit push service in which the payment notification and availability of funds to the payee occur in real-time or near real-time on the basis that the service is available 24 hours a day, 7 days a week.

The development of digital technologies has enabled multiple countries to expand their national payment infrastructure to provide access to secure and affordable real-time payment mechanisms. In emerging markets in particular, cashless payments have seen increasing adoption with advantages based on the improvement of transaction security and reduced transaction costs (Gorshkov, 2022).

Examples of real-time payment systems worldwide include India’s Unified Payment Interface (UPI); PromptPay in Thailand and PIX in Brazil.

1.3 Research problem

Digital and societal transformation in the banking and financial services sector has been embraced by various markets worldwide. In South Africa, efforts are being made to make electronic payments available across all living standards measure (LSM) segments. In addition, approximately 82% of South African adults have access to at least one bank account (South African Reserve Bank, 2024).

The prevalence of cash as a payment method in South Africa has promoted increased efforts to modernise existing payments infrastructure and promote electronic payment systems (South African Reserve Bank, 2024). A study conducted by The University of Pretoria on behalf of SBV Services (2023) details the continued reliance on cash by South African consumers. The study highlights that 22% of South Africans (13.64 million people) have an absolute reliance on cash and see it as the only viable payment option with no intention to change to other payment forms.

As a developing nation, a large challenge faced by South Africa is the continuous development of the national payment system (NPS) in enhancing the accessibility of digital payment mechanisms. Payment's infrastructure in South Africa does not only refer to the development of the NPS, but it also includes the infrastructure needed to enable the use of emerging payment systems – such as real-time payment mechanisms – by consumers.

Additionally, through a review of current literature, multiple factors – including enablers, barriers, and strategies – have been identified as having an impact on the adoption and operation of real-time electronic payments. Factors such as infrastructure development, an enabling regulatory environment, levels of financial and digital literacy and types of digital payment acceptance mediums have been identified as having some influence over the enablement of real-time electronic payments.

The South African Reserve Bank National Payment System Framework and Strategy, Vision 2025 (South African Reserve Bank Vision 2025) is a document stipulating the overarching industry vision for the future of South African payment systems. The document, which was created in 2018 includes broad strategies that the South African Reserve Bank aims to implement by 2025 to achieve the stipulated goals.

Following the creation of the document, there has been a lack of academic research toward the achievement of the goals and implementation of the mentioned strategies. This lack of research forms one of the bases for the conduction of this study to determine the further strategies and critical success factors to enable the adoption of real-time electronic payments.

Whilst the factors identified may be considered relevant in foreign markets (including but not limited to India, Indonesia, Brazil, Thailand, and Canada), there is a considerable lack of research of enablers, barriers, and strategies relevant to real-time electronic payments in a South African context. Understanding the impact of current initiatives and strategies aimed at enabling real-time electronic payment adoption will allow for the proposal of critical success factors to support enablers and mitigate barriers. This has prompted the question what are the enablers, barriers, and strategies to adopting real-time electronic payments in South Africa.

1.4 Research questions

Main research question

What are the drivers, barriers and strategies that enables real-time electronic payment adoption in South Africa?

Research Question 1

What are the enablers for real-time electronic payment adoption in South Africa?

Research Question 2

What challenges hinder the adoption of real-time electronic payments in South Africa?

Research Question 3

What is the impact of current strategies and initiatives to enable the successful adoption of real-time electronic payments in South Africa?

1.5 Rationale

The lack of research relating to real-time electronic payments, their unique benefits and associated uses is what spurred the interest for this study.

This study aims to contribute to the literature from a South African perspective. By understanding the enablers, challenges and impact of real-time electronic payment adoption, this study aims to understand the strategies and critical success factors needed to enable its widespread acceptance and efficient operation.

1.6 Delimitations of the study

For the purposes of this study, real-time electronic payments specifically refer to real-time account-based payments and exclude card-based transactions as card-based transactions utilise a different payment clearing and settlement system to the real-time account based clearing system.

Real-time account-based payments are credit push transactions whilst card-based payments are debit pull transactions

This study will investigate the enablers, barriers and strategies influencing the adoption of real-time electronic payments from a South African context.

Use cases and factors affecting the adoption of real-time electronic payments from other countries have been used within the literature review

1.7 Definition of terms

Term	**Definition**
Credit push payment	A payment transaction whereby the payer initiates the payment instruction to pay the funds to the beneficiary (South African Reserve Bank, 2022)
Debit pull payment	A payment transaction whereby the payer gives the beneficiary mandate to 'pull' or extract funds from the payer's account (South African Reserve Bank, 2022)

e-Wallet / Mobile wallet	An online container that stores a user's payment information, account details and password. An e-wallet allows users to make e-commerce transactions that are integrated into their mobile devices (Sapturi & Pratama, 2021)
Electronic payments	Electronic payments (also known as digital payments, e-payments, or electronic payment systems) refer to the transfer of value from one payment account to another using a digital device such as a mobile phone, computer or point of sale (POS) device as well as a digital communication channel such as mobile wireless data or SWIFT (Pandey, 2022, p. 10121)
Fintech	Financial technology
Mobile payments / Mobile money	Payment methods that enable the payment of goods and services through wireless communication channels, such as smartphones, without the use of cash (Kar, 2021).
Real-time payments / Real-time payment systems	A credit push service in which the payment notification and availability of funds to the payee occur in real-time or near real-time

	on the basis that the service is available 24 hours a day, 7 days a week.

Table 3: Definition of Terms

1.8 Assumptions

Assumptions made include the following:

- Interview participants have knowledge of real-time account-based electronic payment systems
- Participants have knowledge of real-time and electronic payments within a South African perspective
- Participants are experts in their respective fields and have knowledge of recommended best-practices for real-time, account based electronic payment adoption strategies.

1.9 Chapter outline

The following provides a brief outline of the chapters within the research report:

- Chapter 1: The first chapter provides and introduction to the study including background and context, research problem and research questions to be addressed.
- Chapter 2: This chapter provides a detailed review of existing literature and outlines the applicable analytical and conceptual frameworks. The analytical frameworks employed in this research study are the UTAUT and TOE frameworks.
- Chapter 3: This chapter details the research methodology employed throughout this study. It outlines the research paradigm, approach, and design as well as data collection methods employed. Additionally, it

describes the population and sample as well as steps to ensure quality of data.

- Chapter 4: This chapter provides a presentation of the results collected from the study, per proposition. Relevant tables and graphs have been included to facilitate visualisation of the research findings.
- Chapter 5: The fifth chapter provides a detailed discussion and analysis of the findings presented in the previous chapter. The analytical frameworks are employed to enhance the depth of interpretation and provide a more comprehensive analysis.
- Chapter 6: This chapter concludes the study by summarising the findings for each research question, outlining recommendations for stakeholder groups and suggesting avenues for further research.

CHAPTER 2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

The following literature review aims to understand the perceived enablers, barriers, and strategies to adopting real-time electronic payments. As limited literature exists on this topic from a South African perspective, the literature review includes factors and use cases from various countries. In addition, the literature review makes reference to industry documentation such as the South African Reserve Bank National Development Plan Vision 2025 and PwC PayShap report.

2.2 Definition of topic or background discussion

Benefits of real-time electronic payments

Electronic real-time payments refer to payments made via an electronic means where the funds transferred become available to the recipient immediately (Frost et al., 2024). Real-time payments have grown in various countries by enabling an efficient and secure electronic payment method (Frost et al., 2024). As per a study by Frost et al. (2024) real-time payments have grown rapidly in multiple countries with India and China boasting the largest volumes of real-time payment transactions in 2022 at 48.6 billion and 18.5 billion respectively.

India's real-time payments system is referred to as the Unified Payments Interface (UPI) and is an instant, real-time payment system developed by the National Payments Corporation of India (NPCI) to facilitate mobile interbank transactions (National Payments Corporation of India, 2024). Drivers for the creation of this system have stemmed from the need for a greater cashless society and integration to digital public infrastructure. Creating a greater cashless

society enables the promotion of financial inclusion by providing formal financial services to the unbanked and underbanked society.

Further drivers for UPI and the associated real-time payments system in India include the ability for users to make interbank transfers instantly with minimal transaction costs. UPI has been driven by convenience which can be seen by the ability for payments to be made via proxies such as unique IDs. Identifiers such as a bank account number may be used to direct a payment but is not necessary should the recipient have a UPI ID or number (National Payments Corporation of India, 2024).

India is one of multiple countries that have initiated the implementation of a national real-time electronic payments system with other countries including Singapore, Canada, Brazil, and Thailand. Whilst there are clear benefits to the adoption of this payments system, it is important to recognise that industry participants such as financial institutions have a strong incentive to promote these systems as a means to generate revenue.

2.3 Literature search criteria

This section outlines the search strategy taken to identify and select relevant literature on the enablers, barriers and strategies impacting the adoption of real-time electronic payments.

Search terms were developed based on key concepts relevant to the study, including real-time electronic payments and adoption factors. Keywords and phrases included *inter alia* “real-time payments”; “real-time electronic payments”; “real-time payment challenges”; “real-time payment enablers”; and “real-time payment adoption strategy”.

Amongst the inclusion criteria was that the sources needed to be either academic sources, peer-reviewed articles, official government reports and credible industry publications.

2.4 Research Question 1

Research question 1 aims to determine the enablers of real-time electronic payments in South Africa.

2.4.1 *Infrastructure*

An enabler is defined as something or someone that makes it possible for a particular thing to happen or to be done (Cambridge Advanced Learners Dictionary, 2023).

In the context of this study, infrastructure encompasses systems and technology that enable real-time payments (Frost et al., 2024). Infrastructure in this regard may include the settlement system used to settle payment obligations, national payment infrastructure or internet and wi-fi systems used to deliver real-time payments via digital and mobile means (Frost et al., 2024) (South African Reserve Bank, 2022).

In India, Digital Public Infrastructure (DPI) refers to digital platforms that enable vital services such as payment, identification, and data exchange platforms to be delivered to the broader population. A key component of the DPI includes UPI – the real-time payment system (Maheshwari, 2023). Additionally, a study by Balakrishnan and Shuib (2021) identifies infrastructure as a factor significantly associated with the perceived readiness of adopting a cashless payment method in Indonesia.

The South African Reserve Bank (2022) has stipulated a lack of access to infrastructure to lowering the adoption of digital payment methods. Furthermore, there is a lack of peer-reviewed literature to support this statement in a South African context and with regards to real-time payments. Additionally, there is a lack of literature addressing the scalability of existing infrastructure to accommodate growing transaction volumes, especially in a rapidly developing market such as South Africa

With regards to internet and wi-fi infrastructure, in rural areas access to internet at home sits at 1% whilst in metropolitan areas, access is around 17% (South African Reserve Bank, 2022). Whilst it is evident that there is a lack of access to internet in both rural and metropolitan areas, there is a lack of research regarding how internet infrastructure may need to be developed to enable the use of real-time electronic payment systems (South African Reserve Bank, 2022) in South Africa.

A study by PwC (2022) has highlighted a barrier towards real-time electronic payment adoption as being the lack of acceptance of digital payment mediums from certain merchants. In addition to the infrastructure needed to enable the operation of real-time electronic payments, acceptance infrastructure by all merchant types should be considered.

2.4.2 *Proposition 1*

Infrastructure is an enabler for the successful operation and adoption of real-time electronic payments

2.4.3 *Regulatory Environment*

A country's regulatory environment impacts the enablement of real-time electronic payments. Pairman and Sanggita (2021) highlight that real-time payment mechanisms are increasingly being employed by governments globally. In countries such as Thailand, initiatives such as Thailand 4.0 – supported by the Thai government – was aimed at promoting the adoption and innovation of cashless payment methods throughout the country (Hossain, 2021). The Council of the European Union and the European parliament are other examples of regulatory bodies to promote the use of real-time payments. The Instant Payments Regulation is a new European legislation that requires all payment service providers (PSPs) to offer instant payments across European Union member states (Council of the European Union, 2024).

The Reserve Bank of India together with the Indian Banks Association have enabled a regulatory environment that supports real-time electronic payments that is supported by the Indian government. The regulatory environment does not just support traditional financial institutions - such as banks - as provisions have been made to support other fintechs and digital payment apps in the provision of real-time electronic payments (George et al., 2023).

Access to alternative payment methods have been accelerated via various electronic payment mediums. Mobile payments (also known as mobile money), a subset of electronic payments, are payment methods that enable the payment of goods and services through wireless communication channels, such as smartphones, without the use of cash (Kar, 2021). Mobile payments gained popularity with increased smartphone and internet penetration in multiple countries. This payment medium allows consumers to bypass the constraints of traditional financial infrastructure and access secure financial services at an affordable cost (Nan et al., 2021).

Whilst there are many arguments for the benefits of mobile payments, further studies indicate a lack of adoption of these electronic payment methods specifically in South Africa. M-Pesa, a popular mobile payment and lending system that gained prominence in Kenya is an example of a mobile payment system that failed to gain traction in South Africa (Rouse et al., 2023) (Webb & Mgijima, 2024). A factor proposed as a reason behind the failure was a lack of support of mobile payment services from existing regulatory frameworks.

Whilst the support of a country's regulatory body has been identified as an enabler for the adoption and roll-out of real-time electronic payments, it is important to consider the associated challenges. Mastercard (2022) highlights that collaboration and coordination between the numerous industry stakeholders involved may be challenging. Providing fair terms of operation between traditional financial institutions such as banks and non-traditional bodies such as fintechs may prove difficult, especially when establishing environments such as regulatory sandboxes.

Another consideration for potential network participants includes stringent compliance with a host of various regulatory bodies (such as the South African Reserve Bank, Payments Association of South Africa, and Banking Association of South Africa) which incurs a variety of compliance costs. In addition, smaller financial institutions such as fintechs may need to be governed differently to banks and specific regulations will need to be established to ensure fair regulation (Mastercard, 2022).

Regulatory support in enabling real-time electronic payments differs between countries. The SARB Vision 2025 highlights the need for a clear regulatory and governance framework to support both banks and non-banks (South African Reserve Bank, 2018). Whilst this remains a vision of the SARB, there is a lack of formal academic research about the ability of the SARB to achieve this goal as well as the initiatives in place to ensure a level regulatory playing field between banks and non-banks as payment services providers (PSPs).

2.4.4 *Proposition 2*

A clear and transparent regulatory and governance framework is an enabler for real-time electronic payments

2.5 Research Question 2

Research question 2 aims to determine the barriers hindering the adoption of real-time electronic payments in South Africa.

2.5.1 *Financial Literacy*

Whilst real-time electronic payments are enabled by various factors, there are also associated challenges that hinder its widespread adoption (George et al., 2023). Real-time electronic payments often use mobile phones as mediums to carry out transactions. Using an electronic means to carry out a financial transaction requires a level of financial and digital literacy.

Long et al. (2023) highlight that various studies express a positive correlation between financial literacy and the adoption of financial technology services such as e-payments. In addition, a Japanese study on the relationship between electronic and mobile payments and financial literacy shows that the decision to use a specific financial technology product is adversely affected by individuals with lower levels of financial literacy (Long et al., 2023). In the case of real-time payment adoption in India, George et al. (2023) highlight the low uptake of electronic payment means such as mobile money due to a lack of familiarity with using the associated system.

Whilst there remains correlation between electronic payments and financial literacy there is a lack of literature surrounding the impact of digital and financial literacy as barriers to adopting real-time payments. Furthermore, there is a lack of research evaluating current digital and financial literacy programmes and the extent to which they are successful in enabling real-time payment adoption in South Africa.

2.5.2 *Proposition 3*

Decreased financial and digital literacy are barriers to the success of real-time electronic payments in South Africa

2.5.3 *Trust and Security*

Another barrier to the adoption of real-time electronic payments is the perception of trust in electronic payment methods. In a study specific to UPI, George et al., (2023) highlights security concerns using real-time cashless payments as a challenge to the widespread adoption of UPI by consumers. In many countries, the roll-out of mobile, real-time electronic payments are fairly new. Consumers are therefore concerned about data breaches, and potential fraud (George et al., 2023)

Khando et al. (2022) identified trust in the use of electronic payment methods as a large challenge towards its adoption. Trust refers to the accumulation of user beliefs of integrity and the ability for them to willingly use technology easily (Khando et al., 2022). Trust has emerged as a barrier to the use of emerging electronic payment methods such as real-time payments due to the perceived risk of security concerns associated with technology use. A large concern, from the study, was the ability for mobile devices to be stolen and for confidential financial information to be exposed.

Decreased trust in adopting electronic and real-time payment mechanisms differ per country and per region. Africa reportedly loses about $4 billion to cybercrime every year (Anthony et al., 2024). In South Africa specifically, SIM-swap frauds in 2021 registered a spike that cost a victim an average of $900 per incident (Anthony et al., 2024). Attacks on mobile devices affect consumers' trust and make it increasingly difficult to encourage them to use banking functions via mobile phones. Cybersecurity measures taken to protect digital payment systems must also be extended to payment channels to promote increased trust amongst consumers.

The South African Reserve Bank's Vision 2025 (2018) has listed increased transparency and accountability as a goal to increasing trust in payment systems. Whilst this has been stipulated in the roadmap, there is no further academic evaluating the initiatives employed by the SARB to increase transparency, accountability and trust from a regulatory aspect and the extent to which these initiatives have been successful.

2.5.4 *Proposition 4*

Perceived trust and security affect the adoption of real-time electronic payments

2.5.5 *Proposition 5*

There are multiple enablers and barriers to real-time electronic payment adoption, some of which differ between countries

2.6 Research Question 3

Research question 3 aims to evaluate the perceived impact of current strategies and initiatives to enable the successful adoption of real-time electronic payments in South Africa. In doing so, critical success factors and additional strategies can be proposed.

2.6.1 *Initiatives to support infrastructure and regulation*

The South African Reserve Bank in the Vision 2025 (2018) have highlighted, multiple times, the need for collaboration at an industry and network level. The aim of this innovation is to provide accessible and innovative digital financial services to all citizens. In addition, collaboration at the infrastructure level aims to allow both banks and non-banks (such as fintech's) to provide payment services under the same legal and regulatory frameworks.

Whilst this remains a goal of the South African Reserve Bank, there is little formal research to assess the initiatives and strategies to foster this collaboration and provide an inclusive regulatory environment for all payment service providers.

Initiatives such as PayShap and the strategies outlined in the Payments Ecosystem Modernisation (PEM) programme have been identified as ways in which to contribute to the development of the national payments system (NPS) and increase adoption of real-time electronic payments in South Africa. These initiatives have been recently launched with PayShap implemented less than two years from the date this research report was submitted. As such little academic research exists to assess the impact of these strategies in enabling real-time payment adoption in South Africa.

2.6.2 *PayShap*

To develop the National Payments System, BankservAfrica (South Africa's national payment clearing house) together with the major South African banks launched the development of PayShap, a South African instant interbank electronic payment service (Strategy&, 2023).

PayShap is a new development to the South African payments and financial services sector and enables instant, electronic funds transfers between participants (BankservAfrica, 2024). Much like India's UPI and Brazil's PIX, PayShap enables consumers to make payments without having to input a bank account number. This works by using proxies such as a PayShap ID or cell phone number as a unique identifier for transferring funds (BankservAfrica, 2024).

Whilst PayShap boasts benefits such as security and efficiency, there is a considerable lack of academic research investigating the impact and success of PayShap to enabling real-time electronic payment adoption. In addition, limited information exists regarding the strategies to be employed to enable the continuous development and relevance of PayShap in a South African market.

2.6.3 *Additional Initiatives*

The implementation of real-time electronic payment systems depends on differences in stakeholder readiness. As such, various approaches may need to be implemented, per stakeholder group, to ensure successful adoption and implementation (Mastercard, 2022). Mastercard (2022) further emphasises the need for regulatory bodies to be capable of enacting and regulating payment rails and employing fair frameworks for all participating institutions whilst financial institutions should be able to adapt to, and integrate real-time payment technology. Consequently, both regulators and financial institutions should consider consumer readiness factors as inputs to their strategies.

Whilst there may exist additional industry, organisational and regulatory initiatives to promote the enablement of real-time electronic payments in South Africa, little research has been done to highlight these initiatives as well as their impact.

2.6.4 *Proposition 6*

The impact of current strategies and initiatives have not been evaluated against enabling real-time electronic payments in South Africa

2.7 ANALYTICAL FRAMEWORK

2.7.1 *Theoretical Framework*

This study focuses on the enablers, barriers, and strategies to adopting real-time electronic payments in South Africa. As such a technological framework that evaluates the various aspects of acceptance and enablement was chosen.

The theoretical frameworks used to support this study are the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Technology-Organisation-Environment (TOE) framework. Combined, these two frameworks provide a comprehensive view of the factors, both internal and external, that affect the enablement and adoption of real-time electronic payments in South Africa.

The UTAUT model considers factors that influence the acceptance and use of technology. The model suggests that the perceived likelihood of adopting technology is dependent on four main constructs, namely performance expectancy, effort expectancy, social influence, and other facilitating conditions. The UTAUT model builds on the Technology Acceptance Model (TAM) which was created to investigate the processes underpinning the acceptance of technology to provide a theoretical explanation for its successful implementation (Marikyan & Papagiannidis, 2023). This supports the basis of the study by

allowing the researcher to understand the factors that hinder or enable successful adoption and implementation of real-time electronic payments. In doing so, critical success factors and strategies can be identified.

Within the UTAUT model, performance expectancy refers to the degree to which an individual believes that using the system will help him or her attain gains in performance. Effort expectancy is defined as the degree of ease toward using a specific system whilst social expectancy is the degree to which an individual perceives that important others perceives the technology should be used. Facilitating conditions acts a construct to define how an individual believes that technological or organisational infrastructure exists to support the use of the system (Venkatesh et al., 2003).

The adoption of real-time electronic payment systems is independent of constructs such as gender and as such these constructs are not relevant in the context of the study.

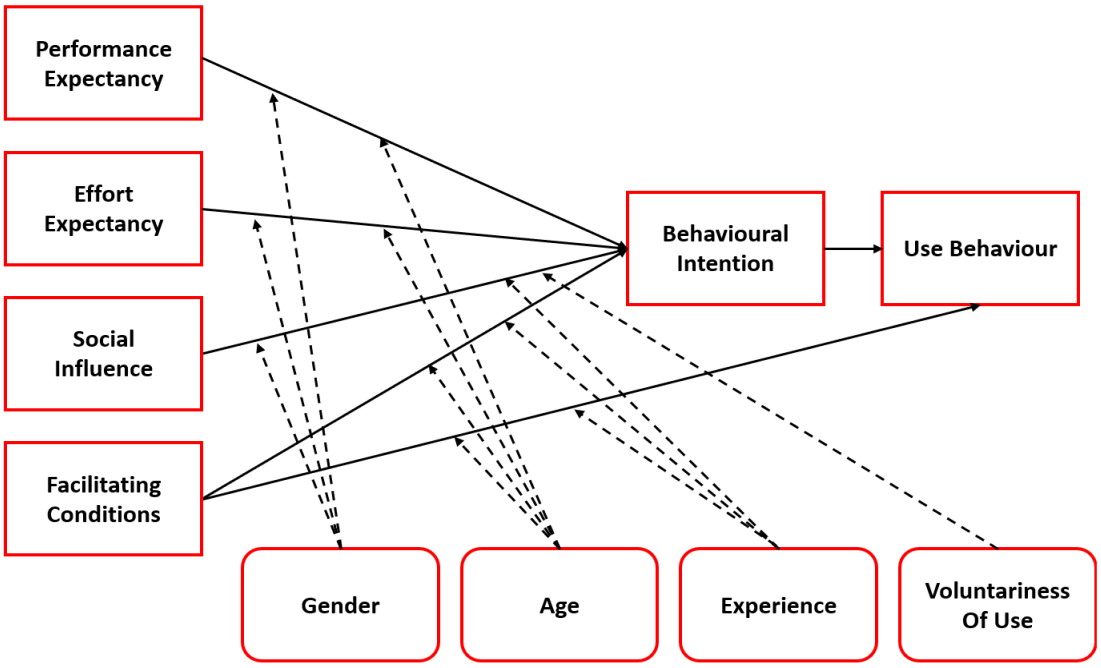

Figure 1: UTAUT Framework

The TOE framework was established by Tornatzky and Fleischer in "*The Process of Technological Innovation"* and is used to analyse a firm's adoption of a technological innovation based on three constructs these being the technological context, organisational context, and external environment in which the organisation operates, which includes industry and regulatory environment (Baker, 2011). The TOE framework may be used to provide insight into the facilitating conditions that enable the successful adoption and implementation of real-time electronic payments by providing informing the study from an industry and regulatory perspective.

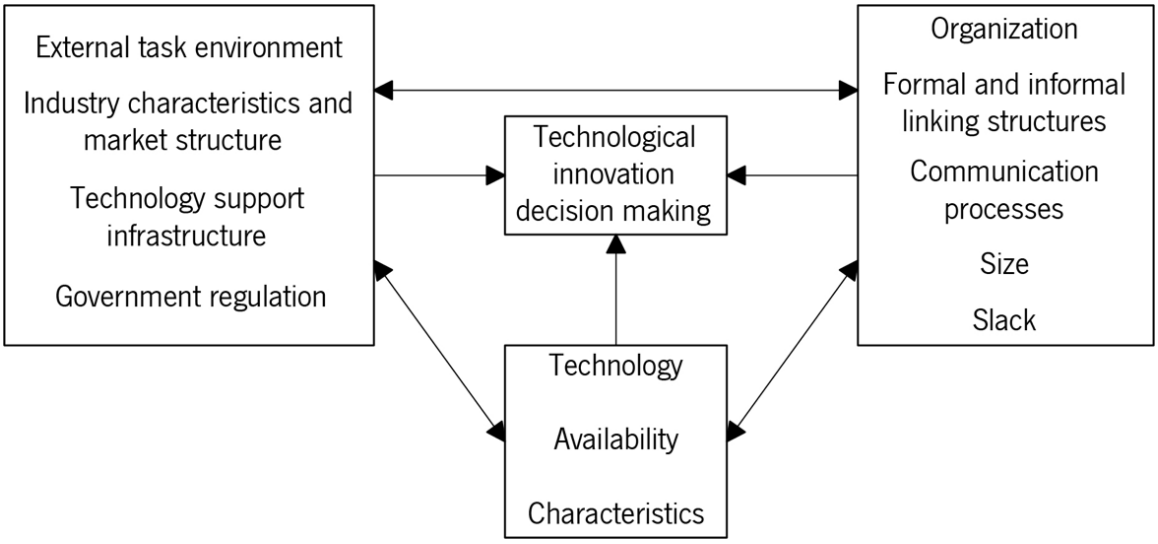

Figure 2: TOE Framework

2.7.2 *Conceptual Framework*

The conceptual framework describes the approach to undertaking the study. The study begins by gaining insights to perceived factors that enable, or challenge the adoption of real-time electronic payments as well as describes current initiatives or strategies aimed at enabling successful adoption. The factors have been identified by performing a literature review and reviewing industry reports.

Following the literature review, propositions were formulated to contextualise the literature reviewed. Qualitative interviews will then be conducted with various experts in the payments and financial services industry and from various regulatory bodies. The sample population will be purposively selected, and a snowballing technique was applied where additional participants needed to be identified. Qualitative interviews are subjective in nature and allow for a richness in responses from various sources. Following the successful completion of the interviews, a thematic analysis will be conducted to analyse the data. As an output, critical success factors or additional strategies for the adoption of real-time electronic payments in South Africa were identified.

The conceptual framework has been visualised below

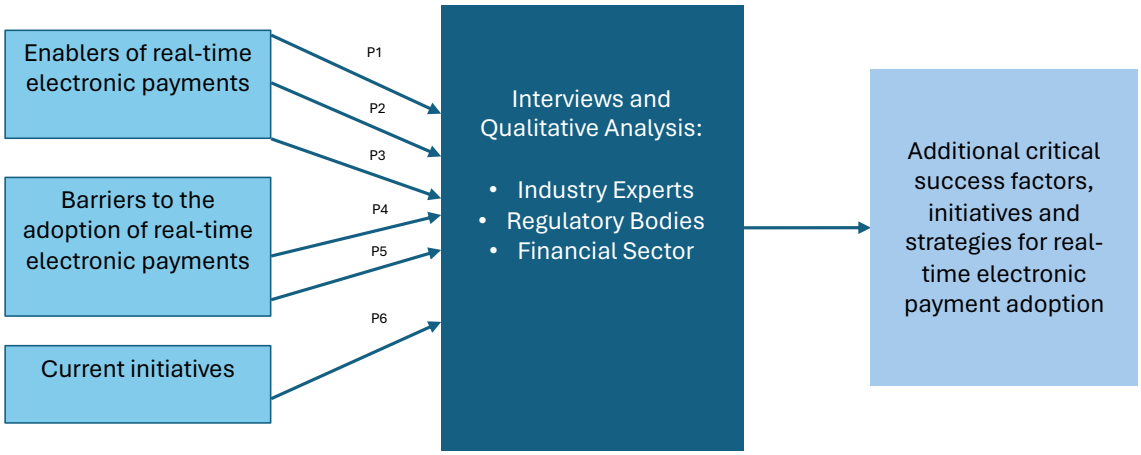

Figure 3: Conceptual Framework

2.8 Conclusion of Literature Review

The literature review has explored various enablers, barriers, and strategies to enable adoption of real-time electronic payments. Some enablers and barriers

are specific to electronic payments as research surrounding factors that affect the adoption of real-time payments is limited. The literature review has also highlighted a key South African initiative – PayShap – aimed at increasing the widespread use and acceptance of real-time electronic payments. Whilst this is a key industry initiative, there is a considerable lack of research around its success in South Africa, partly due to its recent roll-out.

Below represents a summary of propositions created through the literature review

2.8.1 *Proposition 1: Infrastructure is an enabler for the successful operation and adoption of real-time electronic payments*

2.8.2 *Proposition 2: A clear and transparent regulatory and governance framework is an enabler for real-time electronic payments*

2.8.3 *Proposition 3: Decreased financial and digital literacy are barriers to the success of real-time electronic payments in South Africa*

2.8.4 *Proposition 4: Perceived trust and security affect the adoption of real-time electronic payments*

2.8.5 *Proposition 5: There are multiple enablers and barriers to real-time electronic payment adoption, some of which differ between countries*

2.8.6 *Proposition 6: The impact of current strategies and initiatives have not been evaluated against enabling real-time electronic payments in South Africa*

CHAPTER 3. RESEARCH METHODOLOGY

3.1 Research Paradigm

The study is qualitative in nature and as such, responses collected are subjective and socially constructed. The research paradigm that underpins this study is the interpretivism approach. Alharahsheh and Pius (2019) describe interpretivism as a paradigm concerned with exploring in-depth variables and factors of a given context. Interpretivism considers cultural differences and circumstantial events, and aims to analyse the richness of insights gathered (Alharahsheh & Pius, 2019). Supported by the subjectivist ontology and epistemology, interviewees have shared their own opinions in answering the research questions.

3.2 Research approach

The research approach chosen is a qualitative study. Qualitative studies enable further exploration of topics and allows the researcher to describe and explore factors and themes throughout the research.

This study focuses on the drivers, barriers, and strategies to enabling the adoption of real time payments from a South African context. In a country specific context, answers are subjective and context dependent. Conducting qualitative interviews allowed for the thoughts and opinions of interviewees to be accurately captured and analysed in the context of the country and environment. Conducting a qualitative study whilst employing the interpretivism paradigm assisted in gathering insight-rich data through the views of various participants.

3.3 Research design

The research design chosen for this study is the Qualitative General design. This design has been chosen as it seeks to describe, understand, and interpret humans' perceptions. Additionally, this approach allows for the exploration of

complex behaviours, perceptions, and contextual influences that cannot be fully captured through quantitative methods. The research seeks to understand the drivers, barriers, and strategies to adopting real-time electronic payments in South Africa. Academic requirements for this study suggest between 8-16 in-depth interviews aimed at understanding and interpreting the views of the participants. Combined with an interpretivism approach, the Qualitative General design allows for participants with various backgrounds and from different industries to share their opinions on the topic based on their subjective industry knowledge and context-specific views. The Qualitative General approach allows for a range of qualitative analysis methods such as thematic or content analysis. This research makes use of a cross-sectional approach which allows for data collection at a point in time (Kesmodel, 2018).

3.4 Data collection methods

The study employed semi-structured interviews to collect data. The interviews were conducted to explore and gather meaningful insights from the participants, encouraging them to share detailed perspectives and experiences that could enrich the understanding of the topic and research questions. All interviews were held online.

Interviews were recorded, and consent for recording was requested prior to conducting the interview. Participants have also been asked to disclose the industry in which they work, however disclosure of this information was voluntary.

Interviews were held to deliver data-rich, long-form responses from multiple sources

3.5 Population and sample

3.5.1 *Population*

The population for this study comprises of industry experts and employees in the payments, financial services, and regulatory industries.

These participants were chosen due to their familiarity with and knowledge of electronic or real-time payment initiatives and factors that influence these payment types.

3.5.2 *Sample and sampling method*

Academic requirements for the Qualitative General research design stipulates a sample size of 8-16 interviews. This study aims to analyse the views and opinions from subject matter experts. To gain maximum insight without information saturation, 11 interviews were conducted as the sample for this study.

This study employed a purposive sampling method. Purposive sampling is used for the identification of information-rich scenarios. Purposive sampling involves gaining information from individuals that are especially knowledgeable about or experienced with a particular field of interest (Palinkas et al., 2015). This method was chosen as the population identified industry experts with knowledge related to electronic real-time payments and factors influencing enablement and adoption.

The snowballing technique was also used where participants were able to recommend additional interviewees that they believed were able to provide a greater depth of knowledge regarding specific interview questions or focus areas within the study.

The sample population chosen included the following participants:

- Experts in the Payments industry

- Those employed at regulatory bodies
- Employees of financial institutions

3.6 The research instrument

The research instrument used was a semi-structured interview guide. A semi-structured interview allows for open-ended questions and provides the opportunity for both the researcher and interviewee to discuss the topics in extended detail. For the purpose of this study, conducting semi-structured interviews allowed for probing questions to and enabled the researcher to prompt the interviewee when further elaboration was required.

The interview guide employed for this study began by providing details surrounding the nature of the study and information about the researcher. This was employed to establish rapport and confirm the study's objectives for the understanding of the interviewee.

Following the introduction, the interview followed a format that allowed the researcher to prompt questions relating to the research objectives and propositions. The interview concluded with an exploration of strategies and initiatives that should be implemented to enable the successful adoption of real-time electronic payments in South Africa.

The interview guide covered the following broad topics:

- Enablers of real-time electronic payment adoption
- Barriers to real-time electronic payment adoption
- Impact of current initiatives to increase the uptake of real-time electronic payments in South Africa
- An evaluation of the current South African real-time payment's initiative, PayShap
- Further strategies to be employed to ensure the successful adoption of real-time payments in South Africa

3.7 Data collection

The data collection procedure involved a direct approach. Participants were approached directly based on selection criteria such as industry and subject knowledge. To begin, the topic and background of the study was introduced to the respondent. The respondents were briefed about the nature and purpose of the study as well as why they were selected as a participant.

Interviews were conducted online, which was considered the most convenient means for the participants. Recording of the interviews was requested with the participant's permission to allow for easy referencing and analysis.

3.8 Data analysis strategies and interpretation

For the purposes of this study, thematic analysis has been employed to analyse the research data. Thematic analysis is employed in qualitative research methods to enable researchers to systematically organise and analyse data (Dawadi, 2020). Thematic analysis involves identifying themes from interviews and transcribed data. A rigorous thematic analysis can produce trustworthy data and attempts to explore multifaceted research issues (Dawadi, 2020).

The following approach has been taken to analyse the findings of this study:

- Transcribing interviews to enable the systematic review, interpretation, and analysis of data
- Coding data by analysing and identifying trends and objectives that are crucial to the propositions and research questions
- Searching for themes from the codes generated
- Analysing and reviewing identified themes

  Themes were reviewed and adjusted to ensure a coherent interpretation of results. Themes were defined and labelled to ensure accurate categorisation of topics and in a manner that was easy to understand and interpret by the researcher.

3.9 Possible limitations and challenges of the study

- The interpretivist paradigm being employed involves a level of subjectivity from both the researcher and interviewer which may lead to possible biases in data interpretation
- Gaining access to interviewees such as industry experts and employees at regulatory bodies or in the public sector may be challenging
- Participants may withhold information due to confidentiality concerns
- Conducting qualitative interviews and research requires significant time from both the researcher and interviewee
- The use of purposive sampling, although necessary to obtain relevant information, may introduce selection bias whilst snowball sampling may lead to participants that do not have the necessary depth of knowledge to answer the required interview questions

3.10 Quality Assurance

3.10.1 *Transferability*

Transferability of results was achieved by providing thick descriptions of the information collected. This entails providing comprehensive research context and analysis of results for interpretation by readers of the study. Additionally, purposive sampling was utilised to ensure that responses are obtained from knowledgeable sources, thereby enhancing the richness and relevance of the data collected.

3.10.2 *Credibility*

Credibility focuses on the authenticity of research findings. For the purposes of this study, the peer briefing method was used whereby the outcome of the interview process was discussed with the research supervisor to ensure rigor of

the interview process. No personal or identifying details was shared, and anonymity of participants was upheld at all times.

3.10.3 *Dependability*

For the purposes of this study, dependability was achieved through the creation of an audit trail. The audit trail documents the research process, captures any changes to the research design and defines the data collection method and manner in which participants were interviewed. The audit trail also ensures that transcripts and audio or video recordings are password protected and stored in a secure repository for record keeping.

3.11 Ethical considerations

Ensuring ethical conduct is essential for maintaining the integrity and academic rigor of the study. This study involves qualitative research and as such, human participants will need to be interviewed. Maintaining appropriate ethical conduct assists in ensuring the anonymity and well-being of interview participants. The following ethical considerations have been taken into account

- Participants were informed about the purpose of the study, the background of the researcher and how their data will be processed and used before carrying out the interview
- Anonymity of research participants has been maintained at all times with the individual identities of participants known only to the researcher.
- To ensure confidentiality, no identities of research participants have been enclosed in the final report, this includes names or any other identifying information.
- For virtual interviews, verbal consent for recording the interview was obtained before the start of the interview with the researcher explaining ethical and anonymity protocols in detail.

- Participants identities have been protected by assigning aliases to each participant (e.g. Participant A)
- All data including audio and video recordings, interview transcripts and interpretation of results have been stored in a secure repository
- A detailed ethics application was submitted to the Wits Business School (WBS) ethics committee for ethics clearance to proceed with data collection.
- Ethics approval was granted by the Wits Business School Ethics Committee allowing the researcher to proceed with the research on the condition that the anonymity of participants was maintained.

CHAPTER 4. PRESENTATION OF FINDINGS

4.1 Introduction

The study interrogates the factors impacting the adoption of real-time electronic payments in South Africa and encompasses the various enablers, barriers and strategies associated with adoption.

This chapter presents the results pertaining to each proposition. The findings presented are based on participants' responses to interview questions designed to explore the propositions and provide possible answers to the research questions.

Thematic analysis was conducted to identify key patterns and insights and where applicable, tables and pie charts are used to visually represent the distribution of responses.

4.2 Results pertaining to Proposition 1

Proposition one states that "infrastructure is an enabler for the successful operation and adoption of real-time electronic payments". For the purposes of this study, infrastructure encompasses payment acceptance mediums as well as data connectivity infrastructure and real-time payment clearing and settlement infrastructure.

Each of these elements are thought to have an impact on the adoption of real-time electronic payments with outcomes from the literature review suggesting infrastructure as a driver for the perceived readiness of adopting a cashless payment method (Balakrishnan & Shuib, 2021) (South African Reserve Bank, 2022).

4.2.1 *Acceptance infrastructure*

For the purposes of this study, real-time payment acceptance infrastructure includes mediums that facilitate the acceptance of real-time digital payments by merchants.

To assess whether acceptance infrastructure influenced the adoption of real-time electronic payments, participants were asked for their perspectives on how existing payment acceptance methods impact uptake and whether they perceive the current level of acceptance infrastructure to be sufficient.

Out of the 11 participants interviewed, all participants expressed the view that acceptance infrastructure is an enabler for real-time electronic payment adoption. Additionally, 10 out of the 11 participants expressed the view that in its current state real-time payment acceptance infrastructure is insufficient in encouraging the widespread adoption of real-time electronic payments. These participants cited various challenges such as the high cost of payment acceptance mediums, the lack of acceptance of digital payments in lower LSM areas and the current inability to make real-time person to business (P2B) payments. Participant H highlighted this to be a field where the “resourcefulness and pioneering spirit” of fintech’s would thrive.

One participant believed that current digital acceptance infrastructure is sufficient and should be repurposed to use on real-time rails. Currently, the most common type of acceptance infrastructure for digital payments are Point of Sale (PoS) machines.

According to the responses from participants, acceptance infrastructure is an enabler for real-time electronic payment adoption when it facilitates the successful acceptance of payments by all merchants. In its current state the real-time payments infrastructure constitutes capital-heavy devices such as PoS machines which are currently not fit for purpose in facilitating real-time payment transactions in all areas. The majority of respondents have therefore expressed

dissatisfaction with the cost and proliferation of existing acceptance infrastructure.

4.2.2 *Communications infrastructure*

The interview question posed to participants queried if “participants believe that communications infrastructure such as access to internet and wi-fi is an enabler of real-time payment adoption in South Africa?”. Before answering the question, four interviewees noted that the primary issue is access to data (including affordability), rather than internet or wi-fi connectivity. This arises from the notion that most real-time transactions are conducted using mobile devices that rely on data connectivity to execute financial operations. For the purposes of this study, communications infrastructure refers to infrastructure that enables access to the internet, wi-fi or mobile data services, allowing users to conduct digital transactions.

Participants were asked to share their views on whether communications infrastructure is an enabler for real-time electronic payment adoption in South Africa. In addition, participants were also asked whether they were aware of any strategies that are enabling wide-spread internet or wi-fi connectivity to enable the adoption of real-time payments in South Africa?

Whilst 100% of respondents answered in favour of access to communications infrastructure being an enabler for real-time electronic payment adoption, only 36% were aware of any strategies aimed at enabling wide-spread connectivity for the purposes of carrying out digital transactions.

Another 27% of respondents were aware of strategies however these were not yet being implemented in South Africa.

Prevalent themes in this regard included increasing the viability of providing offline solutions for users to make transactions without the need for live data

connectivity as well as establishing how companies such as fintechs could enable effective accessibility mediums and solutions.

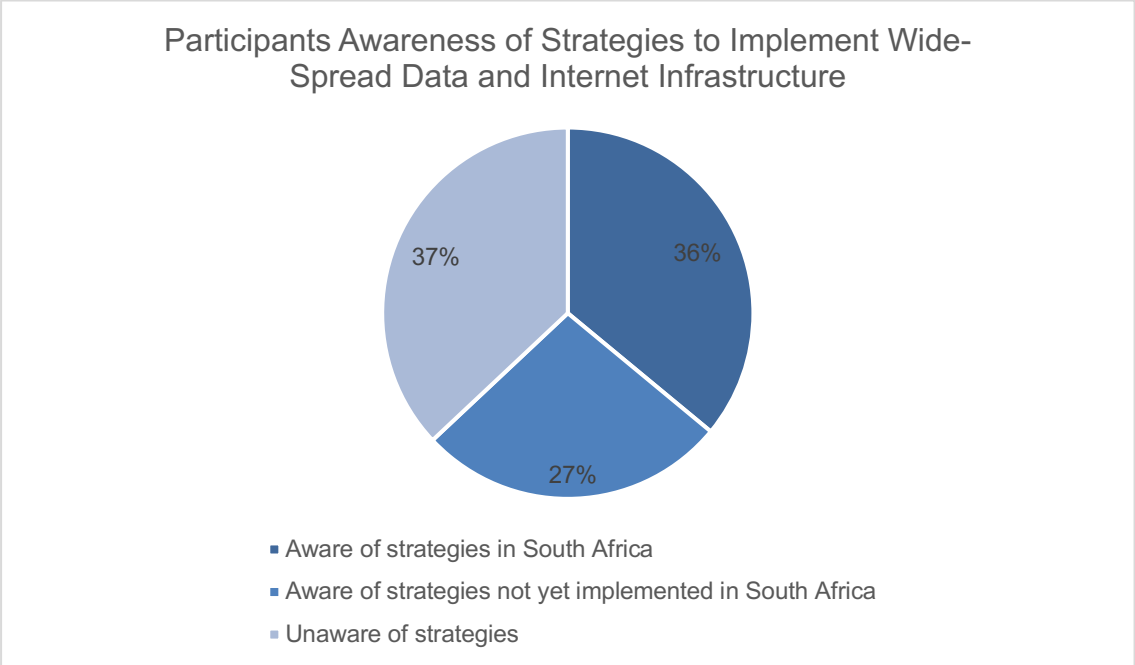

Figure 4: Awareness of strategies for expanding data and internet infrastructure to enable real-time transactions

Communications infrastructure is identified as a facilitating factor in enabling real-time payment adoption however, despite the dependency on access to wi-fi and data services to make digital financial transactions, less than half of the respondents were aware of any public strategies to enhance access and affordability.

4.3 Results pertaining to Proposition 2

Proposition two states that “a clear and transparent regulatory and governance framework is an enabler for real-time electronic payments”. This proposition is based on the notion that a clear and transparent regulatory environment drives the adoption of real-time electronic payments.

To assess the validity of this proposition, participants were asked the following two questions pertaining to the regulatory environment and its impact on real-time electronic payment adoption:

1. What type of regulatory environment will enable the successful adoption and implementation of real-time electronic payments in South Africa?
2. Are there any specific regulatory imperatives that need to be addressed to enable the successful adoption and implementation of real-time electronic payments in South Africa?

Responses generated provided insight into the proposed target regulatory state as well as the current imperatives that need to be addressed. The results presented aim to indicate whether target regulatory conditions can be achieved mainly by employing greater transparency by regulators of the National Payments System (NPS).

4.3.1 *What type of regulatory environment will enable the successful adoption and implementation of real-time electronic payments in South Africa?*

Respondents identified multiple factors aimed at creating a regulatory environment that promotes the adoption of real-time payments. Three main factors emerged as the biggest contributors.

- The need for regulatory environment where the regulator plays a more assertive role, provides increased industry oversight, and defines specific regulatory mandates and imperatives where appropriate.
- A regulatory environment that encourages continuous modernisation and development of the National Payments System
- A regulatory environment that encourages fair and open competition between all industry participants

73% of respondents highlighted the need for the regulator to increase oversight over the NPS and formally associate itself with initiatives designed to promote widespread adoption of real-time electronic payments, thereby enhancing public trust. Participant F cited the need for "the regulator to drive more of the trust. They need to attach their name to some of the real time payments solutions (to gain increased adoption)".

Additionally, respondents noted that the regulator, namely the South African Reserve Bank, needed to act more "assertively" to gain compliance from market participants and actively promote the adoption of real-time electronic payments. This includes increasing oversight of the progress of industry participants in implementing new features and functionality related to PayShap to ensure coordination without hindering overall industry advancement

Participant D expressed the following point "(In terms of) the basic enablers I'd say collaboration of the industry, (and) a very proactive and assertive regulator. In the South African context, the regulator has not been as assertive as they should have been".

Whilst all participants emphasised the necessity of ongoing development of the NPS to facilitate advancement of the payments industry, only 55% of respondents explicitly highlighted the need for an immediate legislative update to align with South Africa's modernisation objectives.

Research that emerged from the study noted that while over 80% of participants stressed the need to enable fintechs to compete in the market, all respondents from financial institutions expressed significant apprehension regarding the implications of increased competition.

4.3.2 *Regulatory imperatives to be addressed*

All participants identified a change to one or more current regulatory imperatives to drive the regulatory environment towards a target state that encourages real-

time payment adoption. The following regulatory imperatives were addressed by multiple participants.

- The regulator should increase oversight and mandate changes where necessary to improve the NPS instead of relying solely on competitive forces to drive market change
- Regulation should be clearly defined to enable non-financial institutions (such as fintechs) to provide real-time payment services
- Regulators should consider subsidising real-time electronic payment costs
- Regulation should be defined to standardise real-time payment acceptance infrastructure to include mediums such as QR codes
- Update legislation such as the National Payment System Act to align with South Africa's modernisation journey goals and align with roadmaps such as the SARB Vision 2025 or digital payments roadmap

The following illustrates the distribution of regulatory imperatives deemed important per participant

Change to regulatory imperitive	Participants that suggested change										
	Participant A	Participant B	Participant C	Participant D	Participant E	Participant F	Participant G	Participant H	Participant I	Participant J	Participant K
Regulator to become more assertive and actively promote the adoption of real-time electronic payments instead of relying solely on competitive forces to drive market change	x	x	x	x	x		x	x			x
Enable non-financial institutions (such as fintechs) to provide real-time payment services	x	x		x		x	x	x	x	x	x
Subsidise real-time electronic payment costs		x	x			x	x		x		
Standardise real-time payment acceptance infrastructure to include mediums such as QR codes - Interoperability and acceptance		x		x							x
Update legislation such as the National Payment System Act to align with South Africa's modernisation journey goals and align with roadmaps such as the SARB Vision 2025 / 2030	x						x	x	x	x	x

Figure 5: Regulatory imperatives for change

Whilst some participants expressed concern over increased competition, Participant I described fintech's as being "fleet-footed and nifty innovators" and highlighted the impact they could have on providing affordable real-time payment services in currently underserved markets.

Participant E expressed that market forces may not be sufficient to regulate competition expressing the need for "a firmer regulator rather than relying on competitive forces from industry participants who are possibly driving profit interests and commercial interests over and above the national good of affordable payments".

In addition to the main factors listed above, participants suggested additional changes which may contribute to increasing adoption. Participant A highlighted the need to "get South Africa out of the grey listing". Additionally, Participant B emphasised the importance of creating sufficient consumer protection, stating that "repudiation is a big problem, if the merchant is fraudulent when you make a real-time payment you've got no recourse, you can't repudiate that payment. They're going to have to deal with that in the regulation somehow to encourage adoption of these types of payments"

In conclusion, participants emphasised that for meaningful change to occur and for the widespread adoption of real-time electronic payments to be achieved, several interrelated issues must be addressed. These changes are not isolated but rather depend on one another, requiring a coordinated approach to ensure their effective resolution.

4.4 Results pertaining to Proposition 3

The third proposition explores the topics of digital and financial literacy and states that "decreased financial and digital literacy are barriers to the success of real-time electronic payments in South Africa". To explore this, participants were asked to share their views on the perceived relationship between digital and financial literacy and real-time electronic payments.

All 11 respondents agreed that digital and financial literacy influence the adoption of real-time electronic payments; however, they noted that the extent of this impact varies and is dependent on various factors such as age and experience with associated technology such as smartphones.

4 out of the 11 respondents noted that digital and financial literacy had a high impact on the adoption of real-time electronic payments and failure to successfully educate users on the technological and financial aspects of making transactions lead to barriers in adoption.

7 out of the 11 respondents expressed that whilst digital and financial literacy does impact real-time payment adoption, they have a lesser impact than originally perceived due to the rise of and familiarity with technology. Whilst a lack of digital and financial literacy may hinder adoption, participants felt that the standard level of literacy (both digital and financial) amongst users of all LSMs were at a sufficient level not to present as a major barrier.

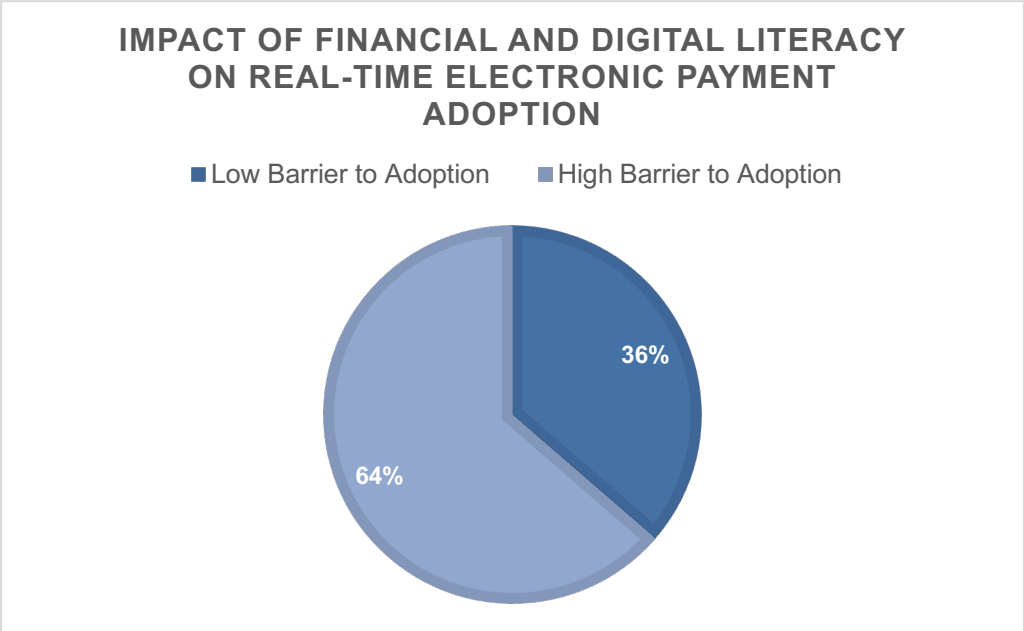

Figure 6: The impact of financial and digital literacy on real-time electronic payment adoption in South Africa

Impact Scale	Paticipant										
	Participant A	Participant B	Participant C	Participant D	Participant E	Participant F	Participant G	Participant H	Participant I	Participant J	Participant K
Major Impact, High Barrier to Adoption				x		x	x				
Fair Impact, High Barrier to Adoption										x	
Fair Impact, Low Barrier to Adoption	x				x			x	x		x
Minor Impact, Low Barrier to Adoption		x	x								
No Impact, Does Not Constitute a Barrier to Adoption											

Figure 7: Heat map of the perceived impact of digital and financial literacy on real-time electronic payment adoption per participant

4.5 Results pertaining to Proposition 4

Proposition 4 states that "perceived trust and security affect the adoption of real-time electronic payments". Participants were asked to consider trust and security in the banking system as well as trust and security in making financial transactions using digital means.

All participants were asked whether they consider perceived trust and security to affect adoption to which 100% of users responded positively.

As a follow-up, participants were asked what they perceive the correlation between perceived trust and security and the adoption of real-time electronic payment to be and whether perceived trust and security has as great of an impact on adoption as has been indicated by the corresponding literature. Khando et al. (2022) identified trust in the use of electronic payment methods as a large challenge towards its adoption due to the risk of data breaches, financial fraud, and device theft. The proposition was posed to determine the dependency between trust and security and the ability to make digital payments.

10 out of 11 participants responded that they believed the correlation to be high with users placing great value on the perceived trust and security of digital banking platforms and in financial institutions themselves. These 10 respondents cited a lack of user education particularly around fraud, online data protection and

digital banking hygiene as being the main reasons users lack trust in real-time electronic banking systems.

One respondent offered a differing perspective, suggesting that users' excessive trust in digital banking systems has led to greater vulnerability to online fraud. This participant indicated that a user's perceived trust and security in a banking system had a low correlation to their intention to adopt that system.

9 of the 11 participants expressed either a lack of user education or an increase in financial crime and fraud, or both, as the two main reasons users lack trust in electronic real-time banking options.

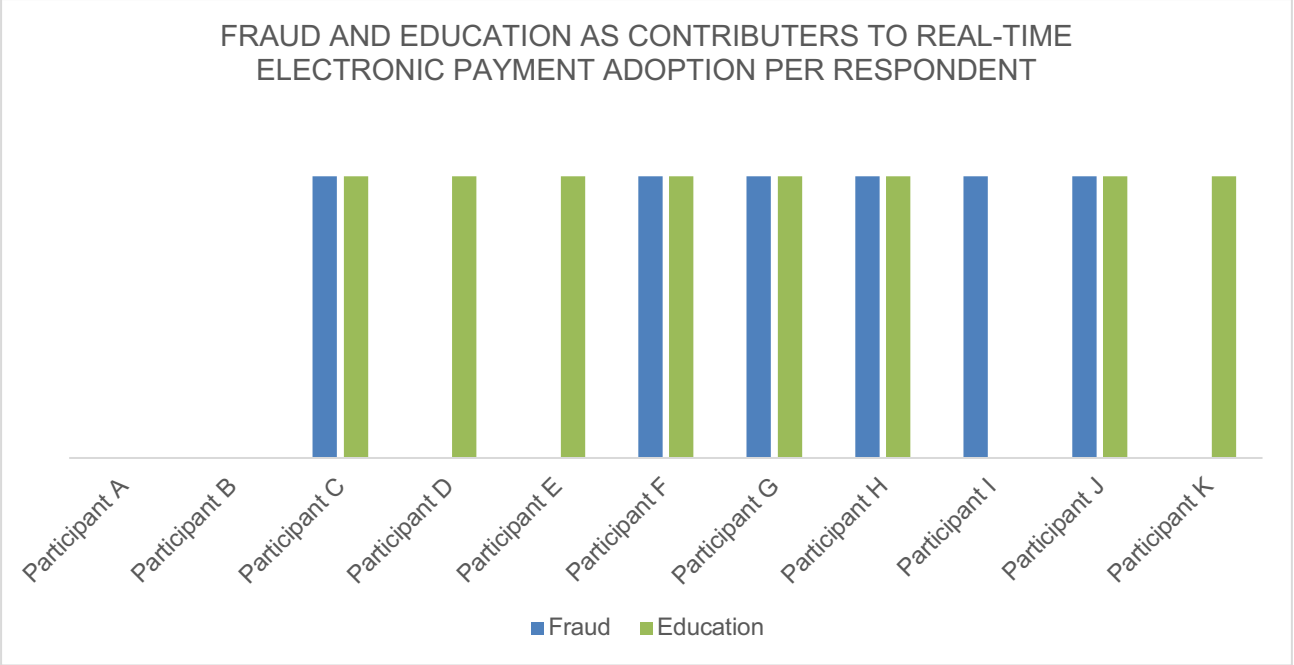

Figure 8: Education and Fraud as contributing factors to real-time electronic payment adoption per respondent

Both trust and security have been shown to have large impacts on the adoption of real-time electronic payments by participants. Fear of financial crime or online transactional fraud as well as a lack of education surrounding these topics have been expressed as the main drivers.

4.6 Results pertaining to Proposition 5

Proposition 5 is a culmination of the research questions and previous propositions and states that “there are multiple enablers and barriers to real-time electronic payment adoption, some of which differ between countries.”

To determine the validity of this statement enablers and barriers additional to those identified in propositions one to five were extracted from interviews with the participants.

Additional enablers and barriers can be grouped under the following main categories:

- Cost and pricing
- User experience

4.6.1 *Cost and pricing*

9 out of the 11 participants expressed various grievances with the current pricing of real-time electronic payment solutions in South Africa, most notably, PayShap. PayShap provides an instant digital alternative to cash and was born out of the payments industry-led Rapid Payments Programme (RPP), which officially kicked off in 2019 to collectively design a viable alternative to cash payments.

In addition to costs associated with PayShap’s transaction fees, interchange fees and fees associated with clearing and settlement of transactions by financial institutions were also raised as being either too high or inconsistent.

Participant C mentioned the following of PayShap upon initial launch “The biggest barrier, especially the bottom end is that the cost was a massive problem”

Participant D also shared similar views by stating the following of the real-time payment solution “(a barrier to adoption is that) I think initially on launch, it was overpriced but slowly the commercial pressure has come onto that”.

4.6.2 *User experience*

8 out of the 11 participants interviewed emphasised the significance of ‘ease of use’ when making real-time electronic payments. Participants drew attention to the fact that user journeys need to be simple and straightforward to encourage continued usage and enhance customer retention.

Participants contrasted the experience of transacting digitally with that of using traditional mediums such as cash and card with Participant C elucidating the following: “you are competing with cash or you're competing with card and if it's not as simple and as easy as using cash or card, consumers get put off, especially in the lower LSMs”.

Participants also expressed the importance of uniform user journeys and highlighted the deliberate decision not to promote PayShap to safeguard their own commercial interests.

4.7 Results pertaining to Proposition 6

Proposition six asserts that "the impact of current strategies and initiatives has not been assessed in relation to enabling real-time electronic payments in South Africa." This statement highlights the need to evaluate existing efforts aimed at promoting real-time electronic payment adoption and to determine their effectiveness in facilitating widespread usage.

As an industry-led initiative, PayShap was born out of the SARB’s ongoing efforts to continually develop the NPS and was developed as part of a strategic effort to support the achievement of the SARB Vision 2025 goals. (South African Reserve Bank, 2023). Goals mentioned in the SARB Vision 2025 strategy included financial inclusion, promoting competition and innovation and financial stability and security. The initiative was launched on 13 March 2023 with the objective of providing a low-value, real-time proxy payments system that would enable financial inclusion by providing a viable alternative to cash (PwC, 2023).

When participants were asked whether PayShap had successfully contributed to achieving the SARB Vision 2025 goals, seven respondents indicated that it currently supports the attainment of these outcomes, whereas four participants indicated that, in its current form, it does not effectively facilitate these objectives.

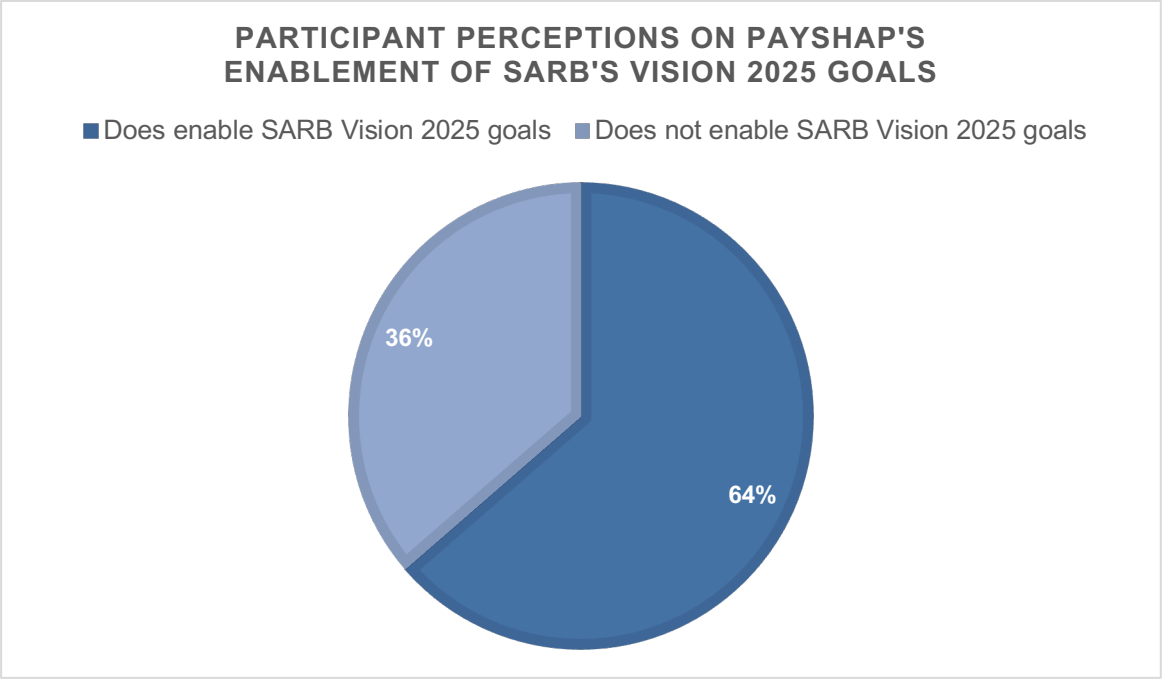

Figure 9: Perceptions of PayShap's enablement of the SARB's Vision 2025 goals

Whilst real-time electronic payments were proposed as a means to enhance the economy by promoting financial inclusion and reducing cash usage, findings from the study suggest that banks view these payments as a threat to their existing revenue streams. Specifically, 10 out of 11 participants highlighted concerns that real-time payments pose a potential cannibalisation risk to competing payment products particularly, card payments. The participant who did not perceive real-time electronic payments to be a form of cannibalisation of existing payment methods expressed the proxy-driven nature as its differentiator. The participant expressed that paying someone using "proxy by name or number is completely

different to loading a beneficiary" emphasising that the difference in user experience should drive new adoption.

Real-time payment systems have been implemented world-wide by countries trying to reduce cash usage and develop their payments system. When asked to identify markets that serve as ideal case studies for South Africa to emulate, all participants (100%) cited India and its Unified Payments Interface (UPI) as a key reference. Additionally, Brazil was recognised as a relevant example, with eight participants highlighting its suitability. The following pie chart presents the primary markets identified by participants.

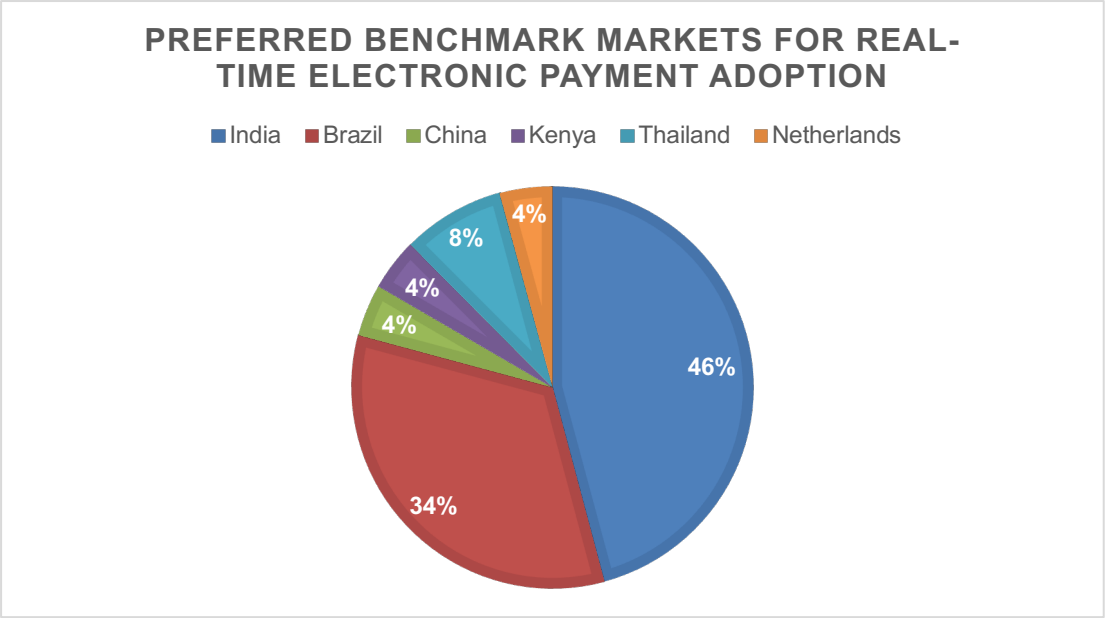

Figure 10: Preferred benchmark markets for real-time electronic payment adoption

To further inform the study, participants were asked what strategies or initiatives they believe need to be implemented to enable the successful adoption of real-time electronic payment adoption in South Africa. Strategies such as decreasing real-time payment transaction costs, allowing non-financial institutions such as fintechs to offer real-time payment services, standardising payments acceptance infrastructure and increasing regulatory oversight, which were discussed earlier

in the report were reinforced and further emphasised. Additional strategies proposed included the following:

- Creating a public payments utility to allow increased oversight of the NPS by the regulator
- Implementing a digital identity to electronically store credentials that uniquely identify a person allowing for easy authentication of payment beneficiaries
- Implementing the PayShap Request-to-Pay feature which allows merchants to request real-time payments from customers
- Encouraging the use of the PayShap pay-by-proxy feature to encourage adoption

4.8 Summary of results

The findings of this study highlight a range of interrelated drivers and barriers influencing real-time electronic payment adoption in South Africa. While some results align with existing literature, notable distinctions emerged, particularly regarding regulatory imperatives requiring change, varying perceptions of digital and financial literacy and further strategies to be employed to increase real-time electronic payment adoption in South Africa. The interconnected nature of these factors underscores the need for industry participants to collaborate effectively in addressing challenges and advancing shared objectives.

Proposition	**Outcome**
Proposition 1: Infrastructure is an enabler for the successful operation and adoption of real-time electronic payments.	According to the responses from participants, acceptance infrastructure is an enabler for real-time electronic payment adoption when it facilitates the successful acceptance of payments by all merchants. In its current

	state, respondents have expressed dissatisfaction with the cost and proliferation of existing acceptance infrastructure. Additionally, access to communications infrastructure has been identified as an enabler for real-time electronic payment adoption.
Proposition 2: A clear and transparent regulatory and governance framework is an enabler for real-time electronic payments.	A clear and transparent regulatory and governance framework has been recognised as a key enabler of real-time electronic payment adoption. However, achieving meaningful progress and widespread adoption requires addressing several interrelated challenges. These include enhancing regulatory oversight of the South African payments industry and creating an enabling environment for fintechs to offer real-time payment services.
Proposition 3: Decreased financial and digital literacy are barriers to the success of real-time electronic payments in South Africa.	Digital and financial literacy were identified as factors influencing the adoption of real-time electronic payments in South Africa; however, the extent of their impact varies. Most participants indicated that, while digital and financial literacy do play a role, their influence is less significant than initially assumed—largely due to increasing familiarity with technology and the widespread use of digital devices

Proposition 4: Perceived trust and security affect the adoption of real-time electronic payments	Both trust and security have been shown to have large impacts on the adoption of real-time electronic payments. Concerns about financial crime and online transactional fraud, coupled with limited awareness and education on these issues have been expressed as the main drivers.
Proposition 5: There are multiple enablers and barriers to real-time electronic payment adoption, some of which differ between countries.	In addition to the barriers and enablers discussed in propositions one to four, additional factors – such as the cost associated with existing real-time payment solutions and the intuitiveness of the user experience – were also found to influence the adoption of real-time electronic payments in South Africa.
Proposition 6: The impact of current strategies and initiatives has not been assessed in relation to enabling real-time electronic payments in South Africa	PayShap is still in its early stages of implementation; however, the majority of respondents believe it aligns with the South African Reserve Bank's Vision 2025 goals. Furthermore, India and Thailand were identified as examples of best-practice real-time payment system implementations, offering valuable lessons that could be adapted to the South African context.

Table 4: Summary of Results

CHAPTER 5. DISCUSSION OF THE FINDINGS

5.1 Introduction

Chapter five presents a detailed analysis of the results outlined in chapter four. It begins by examining interview responses in relation to each proposition, followed by an exploration of the key themes identified. The findings are then compared and analysed in the context of relevant literature. Finally, the chapter concludes with an evaluation through the lens of the two chosen theoretical frameworks – the TOE and UTAUT models – to help contextualise and interpret the results.

5.2 Discussion pertaining to Proposition 1

As stated in the previous chapter, proposition one postulates that infrastructure, is an enabler for the successful operation and adoption of real-time electronic payments. For the purposes of this study, infrastructure referred to current digital payment acceptance mediums and communications infrastructure used to enable wi-fi or internet connectivity to make digital payments.

5.2.1 *Acceptance Infrastructure*

Throughout the study one of the key themes that emerged was the direct competition between real-time electronic payments and cash usage. Respondents emphasised that, despite the increasing adoption of instant digital payment methods, cash continues to be a widely used transaction medium especially amongst the lower LSM market segment. This is supported by the South African Reserve Bank (2024) highlighting that cash usage among consumers and MSMEs (micro, small and medium enterprises) remain relatively high, even as digital payment options become more accessible and widely available.

A key theme that emerged from the study was that the reluctance to adopt digital payment methods, especially in lower LSM segments, is primarily driven by the competition with cash. Transacting with cash is free and convenient. There are no transaction costs associated with making cash payments and it is a readily available payment medium that does not depend on technology for acceptance Cash is often viewed as a cost-free medium unlike digital payment methods which may incur additional transaction fees (Brown et al., 2022).

Currently, to accept digital payments, merchants must invest in capital heavy acceptance mediums such as point of sale (PoS) machines. This capital investment, combined with ongoing merchant service fees, were commonly cited by participants as key factors discouraging merchants from accepting digital payments.

As a solution to the high costs involved, research participants have expressed the need for cheap, lightweight infrastructure to facilitate real-time payments. The most common solution proposed was the implementation of standardised QR codes to facilitate transactions. The gradual increase in QR codes as a convenient, contactless payment method in South Africa has prompted the South African Reserve Bank to facilitate the QR code standard. This standardisation aims to establish a cost-effective scan-to-pay offering that is interoperable between networks and able to process through several payment rails (South African Reserve Bank, 2024). Participants have noted the low cost and convenience of the solution as being beneficial for use by merchants. Customers would simply need to scan the QR code on display to instantly pay for goods or services rendered. QR codes have been promoted as a contactless payment method as part of India's Unified Payments Interface (UPI) model and is described as improving transaction security and speed, especially in retail settings (Patel & Patil, 2023).

Data emerging from the study stressed the need for real-time payments acceptance to be as seamless and ubiquitous as cash and emphasised that acceptance mediums must be designed to ensure ease of use for consumers.

Acedański et al. (2024) elucidated that a significant factor influencing customer's preference for cash payments lies in its capacity to ensure immediate final settlement, which circumvents the need for third-party clearing. Card and cash payments remain a trusted payment mechanism as consumers can be certain of who they are paying. Despite the convenience of using QR codes to facilitate payments, this payment method may also elicit concerns for customers that their payments are not being directed to the intended recipient.

A lack of encouragement from large retailers to accept real-time electronic payments as a standardised payment method in South Africa was noted as a barrier with one research participant indicating that "not even one of the major retailers implement real-time payments". The initial PayShap offering saw real-time payments limited to P2P transactions with payments being initiated by the payers. PayShap's second phase of feature deployment was implemented in November 2024 and facilitates person-to-business (P2B) payments with the "PayShap Request" functionality (BankservAfrica, 2025).

This feature enables merchants such as large retail stores to request instant payments from customers, thereby enhancing convenience and the customer's overall payment experience. This increased convenience factor not only streamlines the transaction process bust also mitigates issues such as long queues facilitating more efficient in-store interactions. Additionally, this functionality can also be used by individuals seeking to request payments from others.

100% of research participants noted acceptance infrastructure as a major contributor towards real-time electronic payment adoption. This is consistent with existing literature which states that the development of reliable and efficient infrastructure, including access points for payment services, is essential to enable innovative digital payment mechanisms (Putrevu et al., 2024). As real-time payments become more widespread, trust in electronic payment methods improves and customers grow increasingly willing to transact digitally. However,

if these payment methods are not widely accepted, their capacity to facilitate transactions across multiple mediums is constrained.

Data emerging from the research indicated that existing acceptance infrastructure is inadequate to support the widespread adoption of real-time electronic payments with factors such as cost, convenience and lack of interoperability being described as major hindrances. Acceptance was highlighted as a key area for innovation and serves as a crucial driver for advancing payment adoption should wider proliferation be achieved.

5.2.2 *Communications Infrastructure*

The study initially described communications infrastructure as having access to wi-fi or internet connectivity for the purposes of making transactions. Several research participants suggested that access to mobile data is also an important criterion for assessing communications infrastructure as it ensures continuous and widespread connectivity, particularly in regions where fixed broadband infrastructure may be limited. Furthermore, reliance on mobile data plays a crucial role in enhancing accessibility and enabling seamless real-time transactions, for users who may not have constant access to wi-fi networks.

Whilst 100% of participants agreed with communications infrastructure as being enablers for real-time electronic payment adoption, cost of data and connectivity rather than access, was identified as the dominant theme. High data costs discourage customers from making online transactions. Research findings highlighted that customers tend to prioritise data usage for communication rather conducting electronic transactions.

The study identified a lack of awareness of strategies enabling widespread internet or wi-fi connectivity for the purposes of increasing real-time electronic payment adoption in South Africa. Although research results indicated that such initiatives are in progress, only 36% of participants were aware of their progress.

Research indicated that whilst strategies to enable widespread connectivity may exist, they have not been created for the sole purpose of enabling real-time payments. One research participant noted that initiatives exist to “create the core infrastructure and then you enable other offerings which would include real time payments”.

Increased efforts to provide greater access to communications infrastructure and affordable data connectivity solutions are essential to foster the adoption of real-time electronic payments. Strategies, such as promoting offline payments, should be explored by financial institutions, along with potential partnerships with Mobile Network Operators (MNOs) to offer low-cost data solutions specifically for transaction purposes. Mir & Wani (2023) have emphasised India’s cheap rates for high-speed data as a crucial step in enabling the country to overcome the digital divide. Cost of data in addition to access has been identified as a driver for real-time payment adoption.

5.3 Discussion pertaining to Proposition 2

The second proposition explores the impact of the regulatory environment on real-time electronic payment adoption in South Africa and aim to investigate whether “a clear and transparent regulatory and governance framework is an enabler for real-time electronic payments”.

South Africa’s National Payments System (NPS) facilitates payments between parties by enabling the transfer of funds across financial institutions. In its regulatory and supervisory capacity, the SARB is responsible for ensuring the operation and efficiency of the NPS in South Africa. While the SARB plays a significant regulatory role, South Africa’s payment landscape is overseen by several key organisations such as the Payments Association of South Africa (PASA), Banking Association of South Africa (BASA) and Financial Intelligence Centre (FIC).

The study identified five key themes regarding the impact of the regulatory environment on real-time electronic payment adoption in South Africa. These five themes are as follows:

- Strengthening regulatory oversight
- Expanding the payments landscape for non-financial institutions
- Encouraging partnerships between the public and private sectors
- Cost subsidisation
- Updating legislation for payments modernisation

5.3.1 *Strengthening regulatory oversight*

Findings analysed from research participants emphasised the need for the payments regulatory body, particularly the SARB, to become more assertive in its oversight of the payments landscape in South Africa. This includes mandating specific actions and policies where necessary and being more involved in the operation of the National Payments System. Findings emerging from the study determined that historically, the regulator adopted a less interventionist approach of governing the South African payments landscape by preferring a “laissez-faire” attitude and allowing market forces to regulate competition and pricing. In recent years and particularly with the implementation of South Africa’s low-value, real-time payment offering PayShap, market participants have noted a lack of effectiveness in this approach.

PayShap was launched with the vision of being a low-value, real-time payment system aimed at promoting digital financial inclusion for consumers and businesses (South African Reserve Bank, 2023). Upon launch, transaction fees were noted to be excessively high, with some financial institutions charging as much as R40 for transactions exceeding R1000. This contradicted the initial objective of the offering, which was to provide low-cost and accessible services to all. Although these costs have subsequently declined due to competitive pricing among banks, research findings have indicated that the adoption rate of the

offering would have been more rapid if the regulator had imposed pricing caps at the time of its launch.

Whilst the research findings suggested the benefits of pricing regulation in increasing adoption, a sample of participants from financial institutions expressed concerns over price caps, citing the potential strain on revenue. These participants suggested the approach of "low-touch pricing regulation" coupled with natural price competition.

Additionally, some participants suggested the possibility of having the regulatory authority mandate the acceptance of real-time electronic payments by large retailers and service providers. Mandating acceptance was proposed as a strategy to foster network effects, thereby developing an ecosystem of trust and familiarity in real-time electronic payments. Whilst this approach enhances the visibility of real-time payment methods, its practicality may be limited. A blanket mandate such as this would require extensive regulatory oversight which may be difficult to implement effectively. Additionally, strengthening cybersecurity and data hygiene methods to prevent against cyber-attacks or service disruptions would require additional investment and possible operational downtime to establish the required processes.

In its attempt to attain greater oversight and authority over the national payments system the SARB has announced its intention to acquire 50% of BankservAfrica, South Africa's leading automated clearing house (ACH), with the objective of transitioning the company into a national payments utility (BankservAfrica, 2024). BankservAfrica was established and owned by the South African banks to enable interbank switching, clearing and settlement of transactions (BankservAfrica, 2024). The South African Reserve Bank's intention to acquire BankservAfrica demonstrates the regulator's effort to become more assertive and transition control of the automated clearing house (ACH) from being solely bank-operated to a collaborative effort between the government and the private sector.

The increased efforts of the regulator to become involved in the operation of the National Payments System reflects similarities to the oversight structure in countries such as Thailand and India. In India, the growth of the UPI solution has in part been credited to the support of a robust regulatory framework (Verma et al., 2024)

5.3.2 *Expanding the payments landscape for non-financial institutions*

Currently, the provision of real-time electronic payments is dominated by financial incumbents. Current regulations prevent fintech's and other non-financial institutions from offering real-time payment services independently. Instead, they must collaborate with a sponsoring bank to facilitate the settlement of funds.

A major theme that emerged was the need to "open the payments ecosystem" to fintechs and non-banks and remove barriers to entry. These institutions are described by research participants as playing a pivotal role in providing innovative solutions using emerging, cost-effective systems and technologies.

Analysis of the research results indicated that fintechs tend to focus on untapped or underserved segments, offering financial services to markets that have not been penetrated by traditional financial institutions. As an illustration, one research participant noted that the number of card payment devices increased from 700 to 2,000 per 100,000 citizens, largely due to innovative solutions from fintech companies such as Yoco and iKhokha. Ediagbonya and Tiouluwani (2023) highlight the ability for fintech's to serve new markets and provide financial tools to additional populations This directly contributes to the SARB Vision 2025 goal of increasing interoperability and financial inclusion in South Africa (South African Reserve Bank, 2018).

Whilst fintechs have been regarded as progressive developers, concerns have been raised regarding the limited regulatory oversight governing these entities. The highest level of apprehension was expressed by participants from financial

institutions, who emphasised the absence of prudential regulation governing fintechs and mobile network operators. This regulatory gap has contributed to the perception that these providers benefit from revenue-generating models without bearing the associated compliance costs.

Responses from interview participants identified initiatives such as the promotion of regulatory sandboxes to provide a controlled environment for fintechs to test solutions whilst regulatory boundaries are addressed. To promote the adoption of India's real-time payment service UPI, the Reserve Bank of India (RBI) established a specialised fintech department to manage initiatives such as regulatory sandboxes and was aimed at and promoting increased innovation by fintechs (Prajapati, 2023).

5.3.3 *Encouraging partnerships between the public and private sectors*

Effectively addressing the regulatory changes identified requires collaboration between the public and private sectors. For meaningful change to occur, the research results expressed that partnerships between commercial entities and regulatory bodies should be established to prioritise the vision of modernising the payments landscape over commercial interests.

A prominent barrier to the initial implementation of PayShap was the ability to encourage collaboration and coordination amongst stakeholders. Progress on implementation was described by one participant as being stifled by "only being able to move as fast as the slowest player". Disagreements over pricing and fears of product cannibalisation discouraged enthusiastic participation from banks. This supports existing literature and reinforces the perspective presented by Mastercard (2022) emphasising that collaboration and coordination between the numerous industry stakeholders involved may be challenging. Data emerging from the study proposed that the regulator should take a more assertive role in monitoring the progress of industry participants, including the enforcement of fines and penalties for non-compliance or for those who fail to comply with

regulatory mandates within specified deadlines. This was referred to by participants as a “carrot and stick method” with incentives provided to early implementers and adopters of regulations and fines and penalties imposed on non-compliant parties.

Putrevu and Mertzanis (2023) highlight the importance of collaboration between the government and private entities such as fintechs, financial incumbents and technology providers in cultivating innovative digital payment solutions.

5.3.4 *Cost subsidisation*

A common theme identified was the potential for the South African Reserve Bank to subsidise various costs associated with real-time electronic payments. The main costs mentioned include merchant service fees, interchange fees and data costs.

Merchant service fees relate to fees payable by merchants to the card acquiring participant for providing the infrastructure used to process payments. These are “payment processing fees” that merchants pay for being able to accept electronic payments. Interchange fees refer to the costs payable by clearing system participants to compensate each other for the cost of providing infrastructure to their non-customers. Interchange fees are often priced at a percentage of the transaction (South African Reserve Bank, 2022).

High merchant fees were identified as a barrier, deterring merchants from adopting digital payments, as they impose an additional financial burden on businesses for accepting digital transactions. To address this issue and promote the adoption of real-time payment acceptance by merchants, participants suggested that the Reserve Bank subsidise merchant service fees, thereby lowering costs or completely facilitating the provision of the service at no charge.

Analysis of the research results expressed that merchants in lower LSM market segments are particularly affected by merchant service fees and failure to

promote digital payment adoption among these merchants undermines efforts to advance financial inclusion – a key goal in the SARB Vision 2025 roadmap.

One participant noted that in countries such as Brazil, merchant fees are subsidised for transactions below a certain threshold to encourage MSMEs to accept digital payments.

In addition to merchant service fees, participants highlighted the possibility for clearer pricing regulation regarding interchange with one participant noting the "ineffectiveness of the current interchange model" as a regulatory lever requiring improvement.

Coupled with service and transaction fees, an additional factor identified was the high cost of data as a barrier to real-time electronic payment adoption. Suggestions to encourage adoption included subsidising or zero-rating data costs associated with making digital transactions. A major theme that emerged was the need to replicate the convenience and accessibility of transacting with cash, a payment medium that does not incur data or transaction fees (Brown et al., 2022). To replicate the cost-free nature of cash transactions and make digital payments a more competitive alternative, data costs associated with digital transactions should be zero-rated. Eliminating these costs would reduce barriers for users, particularly in lower-income segments, and encourage the widespread adoption of real-time electronic payments.

5.3.5 *Updating legislation for payments modernisation*

The payments landscape in South Africa is continuously evolving, driven by the rapid rise of emerging technologies and the growing involvement of non-financial institutions eager to provide innovative financial solutions. Advancements to real-time payment offerings through PayShap, mobile money and contactless payment solutions have contributed to the rapid development of the industry.

To effectively govern these changes participants have indicated an urgent need for an update to the National Payments System Act and additional regulation that encourages a “modernisation agenda” throughout the South African payments industry.

Additionally, research results outlined long turn around in regulatory direction as a factor that impedes consistent progress of payments modernisation, with one participant highlighting that industry participants “have been waiting over six years for an update to the National Payment System Act”. An additional participant emphasised that prolonged response times from regulators compel the industry to progress without adequate regulation or guidance on developments. Delays in regulatory updates hinder the pace of innovation as prolonged waiting periods create obstacles to the timely implementation of new technologies and industry best practices.

To combat these challenges participants have emphasised the need for regular updates to the National Payments System Act to effectively govern changes such as an increased fintech and mobile network operator (MNO) participation and partnerships with the private sector.

Whilst a clear and transparent regulatory environment has been identified as an enabler to real-time electronic payment adoption in South Africa, research results also emphasised the need for greater regulatory oversight and involvement from the regulator.

5.4 Discussion pertaining to Proposition 3

The third proposition investigates financial and digital literacy and its impact as a barrier to real-time electronic payment adoption in South Africa. Proficiency in digital financial literacy is considered a crucial skill for effectively using financial services (Ardini et al., 2024). Additionally, Long et al. (2023) emphasise that various studies express a positive correlation between financial literacy and the adoption of financial technology system such as e-payments.

Past studies revealed that decreased digital and financial literacy hinder digital payment adoption due to the lack of familiarity associated with using the associated technology (George et al., 2023). It also stressed that the concept of digital financial literacy has become essential for consumers as technology becomes increasingly integrated into financial products (Ardini et al., 2024). Concepts such as decreased levels of digital and financial literacy hindering real-time electronic payment adoption has been supported throughout the study.

Results from the research indicate that whilst financial and digital literacy influence the adoption of real-time electronic payments, participants were divided on the extent of this impact with one participant noting that the influence of digital and financial literacy is "often overplayed as a barrier to adoption".

27% of participants expressed digital and financial literacy as having a large impact on consumer's ability to adopt real-time electronic payments however, 73% of participants indicated that, although a correlation exists between adoption and literacy levels, the impact is minimal. Participant H pointed out the adaptability of consumers when adopting new technologies and expressed that "some literacy, digital financial literacy is important from a supply side perspective but don't underestimate the demand side - people are very savvy".

Whilst this observation may be true for a young, digitally-native demographic, considerations must be given to an older audience who may lack trust in or familiarity with digital financial platforms. Research participants outlined the importance of garnering adoption from the "older customers" such as pensioners, highlighting the difficulty of gaining their trust in transacting and transferring money electronically.

A view that emerged that was not expressed in the literature was the importance of education in garnering real-time electronic payment adoption. Participants noted that the main issue may not be literacy but rather insufficient education on how to transact safely and avoid online financial crime. Consumers, specifically in lower LSM markets have displayed a hesitance to transact digitally due to a

mistrust in online financial channels. Participants cite fraud and sim-swap scams as deterrents for users. Participant J expressed the need to do more to drive education and increase adoption, “we need to have focused interventions so that people get the right information to make the right decision. I cannot emphasise it more”. Additional participants expressed similar views noting that it will take time to adequality educate customers in all market segments. An additional factor that emerged was the need for market participants to drive education initiatives as a collective, with effective collaboration being noted as crucial component of driving digital adoption and education. Furthermore, Participant I expressed the need to focus on educating customers around “the usage of the channels as well as the terminology and simplifying it”.

Responses from participants were consistent with views that by low uptake of electronic payment means are due to a lack of familiarity with using the associated system (George et al., 2023). Increasing education and familiarity with real-time payment methods may reduce barriers to adoption.

5.5 Discussion pertaining to Proposition 4

Proposition 4 states that “perceived trust and security affect the adoption of real-time electronic payments”. Poudel et al. (2023) defines perceived security in relation to electronic payment systems as the degree to which people believe a technology or service is secured. Furthermore, trust has been recognised as a critical factor in influencing customers' adoption of electronic payment systems, with higher levels of trust serving as a stronger determinant of their willingness to use such systems (Poudel et al., 2023).

All participants (100%) agreed that perceived trust and security significantly influence the adoption of real-time electronic payments. Moreover, they unanimously emphasised that these are likely two of the most critical factors affecting the uptake of such payment systems and are also aspects that financial institutions have the greatest ability to influence and control.

Two primary themes emerged from the research, the first being the frequent comparison participants made between security and trust in electronic payment systems and security and trust associated with cash usage.

Shandilya (2024) highlights that cash is favoured especially in lower LSM market segments or areas with limited digital infrastructure as it is universally accepted and accessible. Furthermore, cash preserves user privacy by enabling anonymous transactions and avoids the additional costs often associated with digital payments, such as transaction fees. This was supported by participants who expressed that cash continues to be a widely used payment method due to its simplicity and because it does not rely on technology to facilitate transactions.

Participants emphasised customers' distrust of financial institutions and digital payment mechanisms due to the banking and transaction fees associated with these methods. In contrast, cash does not incur such costs, making it a more appealing option for many customers. Participants also noted that in lower LSM markets, customers would routinely withdraw the total value from their accounts and transact in cash to avoid transaction fees and banking charges. Additionally, Participant D highlighted that "customers don't trust because they feel that financial institutions are out to steal their money by way of high transaction costs".

The second theme that emerged was the impact of financial education on security and trust in real-time electronic banking platforms. 73% of participants emphasised that financial education is a key factor influencing customers' perceptions of security and trust in digital banking platforms. Findings indicated that building trust in digital payment systems among consumers, particularly those accustomed to cash, has been a significant hurdle and that many customers are sceptical of using these systems due to the risk of financial crime and fraud. Participants emphasised the importance of educating customers on safe transaction practices and equipping them to recognise and avoid common financial fraud schemes, such as phishing. Whilst customer fraud detection education is crucial Phiri et al. (2024) expressed that online and digital banking fraud may be attributed to weak fraud detection systems by financial institutions.

Data emerging from the study highlighted that in addition to consumer education, Banks may need to assume greater responsibility for fraudulent transactions by assessing outdated processes and legacy systems, rather than consistently shifting blame and financial losses onto consumers. Additional education was noted as necessary to address common misconceptions regarding the costs associated with digital transactions, such as transaction fees, and to highlight the significant safety advantages of using digital payment methods. Participant C reported that market research carried out by their firm revealed that customers in underserved communities, particularly grant recipients, often withdraw all funds from their accounts, believing that leaving a balance at the end of the month suggests that they do not require the full value of the grant received. This results in a continued and heightened reliance on cash which may be mitigated through enhanced educational initiatives.

5.6 Discussion pertaining to Proposition 5

Proposition five states that "there are multiple enablers and barriers to real-time electronic payment adoption, some of which differ between countries." Barriers and enablers investigated per the literature review include a clear and transparent regulatory framework, digital and financial literacy, trust, and security and enabling infrastructure.

Barriers and enablers in addition to those identified in the literature review were identified throughout the study and discussed above. These include:

- Increased regulatory oversight
- Enablement of offline transactions
- Allowing fintech's and non-financial institutions to provide real-time payment services
- Partnerships between non-financial institutions such as fintechs and banks
- A lack of consumer education
- High real-time payment transaction costs

- Product cannibalisation concerns by financial institutions

Interviews with participants identified additional barriers and enablers, many of which were unique to the South African context. These findings were categorised into two main themes.

5.6.1 *Cost and pricing*

The cost and pricing of existing real-time electronic payment solutions in South Africa was identified as one of the most significant barriers to adoption by 91% of research participants. PayShap, South Africa's real-time payment solution was launched on 13 March 2023 as a low-value payment mechanism with the goal of displacing cash and increasing financial inclusion (South African Reserve Bank, 2023) . PayShap's appeal stems from its capability to facilitate payments between individuals without requiring a bank account. Proxies, such as a "ShapID" or cell phone number, serve as unique identifiers, enabling customers to send and receive funds seamlessly. Despite its objective of facilitating cheap and convenient transactions, research participants noted that the offering was still significantly overpriced at launch.

Before the launch of PayShap as a more public and accessible digital payment system, instant payments were facilitated by way of the Real-Time Clearing (RTC) offering. RTC allows for interbank clearing of transactions within 60 seconds. Multiple participants observed that the RTC offering is priced at a relatively high level by banks and constitutes a substantial source of revenue for them. Competition by PayShap, as a low-cost real-time payment alternative, was noted by many participants as a form of product cannibalisation for financial institutions. As banks were permitted to set their own pricing, PayShap was priced to compete with RTC transactions, resulting in an overpriced solution for customers. Research participants identified that for some banks, PayShap pricing at launch was identical to RTC pricing for low-value transactions.

Whilst competitive pressures have since driven prices down, participants expressed that they are still not sufficient for a cost-effective real-time payment offering. Suggestions to combat this included introducing pricing mandates by the SARB to cap transaction costs or subsidising fees to further reduce prices.

Whilst the price of current real-time electronic payment is currently perceived as a barrier to adoption, reducing prices, particularly in cases where costs are minimal or negligible, as demonstrated by offerings in countries such as India, could serve as a significant driver of adoption and promote wider acceptance of the system (Putrevu & Mertzanis, 2023).

Findings from the study emphasised the importance of financial institutions diversifying their banking products to expand their range of revenue-generating offerings, rather than competing for a limited share of a single product.

5.6.2 *User Experience*

Participants emphasised that a significant factor affecting the adoption of real-time electronic payments in South Africa is the user experience associated with accessing the platform and completing transactions. Participant C highlighted that “if user journeys are not simple and straightforward, if it's complicated for somebody to carry out a transaction, they won't use the system”. The participant also contrasted simplicity of real-time payment systems with other payment mediums stating that; “you are competing with cash or you're competing with card and if it's not as simple and as easy as using cash or card, consumers get put off, especially in the lower LSMs”.

Participants emphasised that enhancing the user experience requires simplifying financial terminology. Ensuring that terminology and terms of use are straightforward and accessible is essential to prevent customers from being discouraged from using the system.

Currently, PayShap is accessible only through the mobile applications of individual banks and does not have its own dedicated app or platform, unlike similar systems such as UPI in India. Participants observed that this led to a fragmented customer experience, with users encountering varying methods to access the service, depending on the location within the app. Additionally, PayShap was frequently described as being "buried within the banking app" and “difficult to find”. Participants suggested that the service's lack of accessibility might have been intentional, aimed at diverting attention away from it to prevent a decline in the usage of other banking products such as RTC.

Additionally, PayShap was noted for its "feature parity," whereby not all features and functionalities were uniformly implemented across banks. For example, while some banks enabled the pay-by-proxy feature, others had not yet made it available. This created a disjointed user experience for payers and payees that were not able to transact due to disparate functionality. Research findings indicated that mandates by the regulator enforcing a minimum set of functionality and standard user experience may assist in combating feature parity and making adoption of the system more attractive to users.

Whilst the barriers and enablers identified through the literature review do relate to PayShap, there are various country-specific factors influencing the adoption of the platform. Cost, motives of financial institutions, user experience and current regulatory pressures all contribute to the adoption of the offering in South Africa.

5.7 Discussion pertaining to Proposition 6

Proposition six states that "the impact of current strategies and initiatives has not been assessed in relation to enabling real-time electronic payments in South Africa." PayShap was established as the main strategy to enable increased adoption of real-time electronic payments in South Africa. Whilst the solution has already reached transaction values of R30 million as of May 2024, participants have noted that real-time payment solutions take at least 4 years to achieve the

intended adoption rates. Consequently, scholarly evaluations of PayShap have been constrained, given that it has only been in operation for 22 months.

PayShap was established with the vision of contributing to the development of the NPS and enabling the SARB to achieve several of the goals mentioned in the Vision 2025 strategy. Research emerging from the study revealed that whilst the majority of participants believe that the initiative has the ability to support financial inclusion and decreased cash usage, many participants believe that in its current state these goals are not being achieved.

High costs of transactions, disparate transaction prices between banks and a non-intuitive user design are some of the factors listed as hindering the solution from being effective in lower LSM market segments. In comparison to international real-time solutions such as UPI which have been described as facilitating financial inclusion in rural areas and bridging the digital divide in India (Verma et al., 2024) PayShap has been described as inadequate.

Research emerging from the study has identified the real-time payment solutions in India and Brazil as ideal cases for South Africa to emulate.

India's UPI solution was established as a key component of the country's digital public infrastructure (DPI) initiative. As a result of its integration with Aadhaar, India's digital identity system, UPI has evolved to include innovation such as Aadhar Pay, a biometric authentication method that eliminates the need for physical cards and PINs (Verma et al. 2024). Additional insights from the study indicated that the Indian government's stance to permit fintech companies to offer real-time payment services has played a pivotal role in accelerating innovation in India's payment industry. This supports current literature which credits India's open infrastructure and approach of permitting fintech's to compete within the market as a significant factor contributing to the widespread adoption UPI in India (Anand et al. 2023).

A key driver of the widespread adoption of real-time electronic payments in India is the low transaction costs, with the majority of transactions including peer-to-

peer (P2P) and peer-to-merchant (P2M) transfers being free for most account-to-account transactions (NPCI, 2023).

Research participants noted several factors that made Brazil's real-time payment system PIX favourable amongst consumers and merchants alike. A user-friendly user interface, well-defined proxy system and low transaction costs were listed as factors that enabled mainstream acceptance and adoption. Additionally, mandating low merchant acceptance fees were identified as key factors driving acceptance of the payment system by merchants. The Bank for International Settlements (2022) identified PIX payments as being significantly cheaper to card payments with the average cost to merchants being 0.22% as opposed to 2.2% for credit card transactions.

The strategies identified and implemented by the aforementioned countries have been recognised as potential models for South Africa to replicate to garner increased real-time payment adoption.

One of the most recent strategies established to modernise the South African NPS is the Payments Ecosystem Modernisation programmes (PEM). The PEM programme is a catalyst for several initiatives proposed by the SARB including creating a public payments utility, foundational enablers such as establishing a digital identity and enhanced know your customer (KYC) initiatives and revised interoperability standards aimed to meet the needs of the entire South African payment's ecosystem (South African Reserve Bank, 2023). The PEM has been described by research participants as a way for the regulator to gain increased oversight over the NPS and ensure that all industry participants work together to ensure its continuous development.

An additional initiative identified was the intention of the SARB to establish a "Digital Identity" similar to India's Aadhar. BankservAfrica (2021) describes a digital ID as a set of electronically captured credentials that can uniquely identify a person. Coupled with biometric identification, the Digital ID can be used as a tool to authenticate payment recipients by verifying their financial credentials.

This authentication is particularly crucial given the presence of undocumented foreign nationals in the country and was identified as a way of integrating these individuals into the financial system and facilitating financial inclusion. Furthermore, the application for a digital identity can facilitate the direct payment of government subsidies or grants, such as the SASSA grant, into a recipient's bank account. This method of digital real-time payments ensures timely and efficient distribution of funds and reduces reliance on cash by familiarising individuals in lower LSM market segments with the digital payment ecosystem. Incorporating biometric data as an identifier assists in simplifying the payment process by eliminating the need for cards and PINs whilst enhancing security for real-time payments.

Strategies to enhance the functionality of the PayShap has been identified as crucial to drive greater adoption, particularly among new adopters, such as large retailers. Implementation of the PayShap request-to-pay function has been identified to incentivise retailers to adopt real-time payments. Furthermore, increased promotion of the proxy function is necessary to encourage new adoption. Proxies are aliases for an account number and unlike traditional EFTs, do not require the beneficiary to be pre-loaded. The goal of improving the user experience is to attract early adopters and a technologically proficient market in the hopes of encouraging real-time payment use amongst the youth.

PayShap is still a growing real-time payments solution, and an accurate evaluation of its success may be more suitable in its maturity. In its current state however, greater efforts can be made to garner adoption amongst merchants, and amongst the underbanked. Additionally, to gain increased real-time electronic payment adoption in South Africa, strategies that have proven successful in markets such as India and Brazil, both of which are developing countries, should be considered.

5.8 Analysis using theoretical frameworks

5.8.1 *The UTAUT model*

The UTAUT model suggests that the use of technology is determined by behavioural intention. Additionally, the perceived likelihood of adopting a technology is determined by four key constructs, namely, performance expectancy, effort expectancy, social influence, and other facilitating conditions. The effect of predictors is moderated by age, gender, experience, and voluntariness of use. (Venkatesh et al., 2003).

The UTAUT model has been employed, together with the TOE model, to further understand the barriers and enablers of real-time electronic payment adoption in South Africa.

a. ***Performance expectancy***

Performance expectancy is defined as “the degree to which an individual believes that using the system will help him or her to attain gains in job performance” (Venkatesh et al., 2003). This construct has been adapted from the Technology Acceptance Model (TAM) and explores the impact of using the associated technological system in one’s job to accomplish tasks more quickly or improve job performance (Venkatesh et al., 2003).

The primary purpose of a real-time electronic payment system is to enable instant and convenient financial transactions rather that to improve job performance for any one individual. The core features lie in reducing dependency on cash with the goal of improving financial inclusion, none of which relate directly to workplace productivity or performance improvement.

Whilst the performance expectancy construct may not necessarily relate to individual adopters, the use of a real-time payment system may assist businesses in receiving funds instantly, improving cash flow and liquidity. For merchants, the use of a real-time electronic payment system provides an alternative payment

means to cash whilst still enabling the immediate receipt of funds. This directly impacts their ability to operate efficiently and reliably.

b. ***Effort expectancy***

Venkatesh et al. (2003) defines effort expectancy as “the degree of ease associated with a system”. This includes evaluating factors such as whether learning to operate the system would be easy for users as well as whether the interaction with the system would be clear and understandable (Venkatesh et al., 2003).

As indicated by several participants, a user's experience with navigating a real-time electronic payment system needs to be smooth and convenient to promote its adoption. Complex user journeys deter customers from adopting the system and, in regions where cash remains the dominant payment method, this further reinforces the preference for familiar payment practices.

Analysis of results highlighted that the current user experience of South Africa’s real-time payment system is suboptimal. Several respondents specifically noted that the feature is "buried within the banking app" and not easily accessible for users. Razi-Ur-Rahim et al. (2024) highlighted than when analysing India’s real-time payment system – UPI – against the UTAUT model, effort expectancy was a significant positive indicator of a user’s attitude to use the system. Users were more likely to adopt the technology due to its ease of use and intuitive design however there may still be resistance from users who are accustomed to traditional payment methods , such as cash, due to security and privacy concerns.

User experience was identified in the study as being a current barrier to the adoption of real-time electronic payments in South Africa and this is in line with high effort expected from users when using what should be a simple and intuitive system. As the rollout of PayShap was an industry initiative between the regulator, financial institutions and BankservAfrica, these stakeholders should

work together to develop a standalone PayShap application, independent of individual banking apps, to enhance ease of use and accessibility.

c. *Social Influence*

Social influence is defined as “the degree to which an individual perceives that important others believe he or she should use the new system" (Venkatesh et al., 2003). This refers to the notion that an individual’s behaviour is influenced by the way in which they believe others will view them as a result of using the system or technology (Venkatesh et al., 2003).

Results from the study noted that users are more likely to the adopt real-time electronic payment system if they observe its regular use by others and if it becomes a “widely accepted payment medium by all merchants”. Merchants play a crucial role in driving user adoption of the payment method, as increased adoption cannot be achieved if acceptance remains limited. Facilitating low-cost and convenient acceptance by promoting standardised payment methods, such as QR codes, is therefore a key factor in integrating merchants into the ecosystem and encouraging widespread adoption.

One participant emphasised that social influence is impacted largely by the simplicity of user journeys when using the real-time platform. The participant noted that users are reluctant to appear "silly" for struggling to use the platform in public, and as a result, they may avoid its use entirely if it is not easy to navigate and they feel they might be judged by others.

Social influence is a crucial factor in users' willingness to adopt real-time payment systems, with network effects playing a significant role in enhancing the value of a product as more people use it. Participants expressed the possibility of offering incentives such as cashback and rewards for using PayShap as a way to garner adoption. In India, social influence was compounded by fintechs' promotion of UPI through the provision of incentives, rewards, and cashback schemes. Platforms like GooglePay and Paytm achieved considerable success in driving adoption with these incentive-based models (Sakhiya et al. 2024).

d. *Facilitating conditions*

Venkatesh et al. (2003) defines facilitating conditions as “the degree to which an individual believes that an organisation's and technical infrastructure exists to support the use of the system". This construct supports the social influence construct, as a customer's use of real-time electronic payment mechanisms relies on a merchant's ability to accept and facilitate the transaction.

Furthermore, factors such as a supportive regulatory framework, the subsidisation of merchant service fees, and the ability of fintechs to provide innovative payment solutions all play a role in enabling merchants to adopt real-time payment methods.

Currently, participants indicated that the infrastructure needed to support the uptake of real-time payments in South Africa is insufficient. This is evident from the fact that 10 out of the 11 participants interviewed felt that the necessary infrastructure, particularly for payment acceptance, is lacking. Additionally, all participants (100%) agreed that one or more regulatory imperatives must be addressed to support increased adoption.

Results from the study suggested that this could be achieved by opening the payments ecosystem to fintechs and other non-financial institutions, allowing them to offer solutions and reach market segments that banks are unable to serve.

e. *Voluntariness of use*

Participants highlighted that several merchants exhibit a preference for real-time electronic payments as these enable the immediate clearing of funds unlike other payment methods such as EFTs which do not offer instant settlement. The capability for solutions such as PayShap to facilitate rapid transactions positively impacts efficient cash flow management, a factor specifically important for small and medium sized enterprises.

Conversely, those merchants seeking to avoid or evade tax implications may be resistant to adopting real-time payment solutions. Unlike traditional payment methods such as cash which do not leave an audit trail, digital payments inherently provide a record of transactions, the transparency of which potentially deters merchants who prefer to operate outside of the formal financial system.

f. *Age and other factors*

Given the ubiquity of mobile devices and intention of real-time payments to be straightforward, the adoption barriers associated with age and gender proposed as being reduced when evaluating real-time electronic payment systems. Whilst the utilisation of a real-time payment system is independent of gender, the age of participants may impact the adoption of the platform. Real-time platforms aim to provide a simple, user-friendly interface that minimises complexity, ensuring that the system can be adopted by a wide range of users. his, however, may be contested by older individuals who are not particularly adept with technology and exhibit a general distrust towards technological systems.

Although adoption may take longer for laggards, such as older users or those who prefer traditional payment methods like cash, educational initiatives and social influence from other users are intended to encourage adoption, making the platform accessible to everyone.

5.8.2 *Technology – Organisational – Environmental (TOE) framework*

The TOE framework was established by Tornatzky and Fleischer as a theory that explains technological adoption by organisations based on three different contexts, namely technological, organisational, and environmental (Baker, 2011). The TOE model has been employed to analyse the impact of real-time electronic payments on the entities that provide and enable the service such banks. The institutions are responsible for facilitating interbank real-time payments for

consumers. The two main constructs of the model impacting these institutions are “environment” and “organisation”.

a. *Technological context*

The technological context is described to include the technologies relevant to the firm (Baker, 2011). In terms of enabling real-time payments, key technologies lie in tokenisation models that may be used to enable a Digital ID. Financial service providers may need to adapt by incorporating tokenisation technology and accepting digital IDs for authentication should the Digital ID be implemented for real-time transactions.

Mobile devices play a crucial role in facilitating real-time payments. Financial services providers must ensure that they continually enhance PayShap features and functionalities within their banking apps as well as enable alternative payment methods such as QR codes.

Further technological advancements may be required to integrate with standardised payment rails and ensure interoperability for real-time payment transactions. Additionally, modernisation of core banking infrastructure might be necessary to support the instant processing of high transaction volumes.

b. *Organisational context*

Baker (2011) describes the organisational context as characteristics of the firm. Participants have indicated that financial institutions are concerned that the introduction of real-time payment offerings could lead to the cannibalisation of additional revenue streams generated from traditional card-based transactions and real-time clearing (RTC). Banks typically consider card payments a key revenue source, primarily through transaction fees, interchange fees, and other related charges. Similarly, RTC transactions also generated considerable revenue for financial institutions due to the high transaction fees associated with these services. As such, there is a reluctance to fully embrace real-time payment

systems, as they might reduce reliance on other products and consequently, lower overall revenue from these sources.

However, results from the study emphasised the need for banks to shift their mindset in order to recognise the broader long-term benefits of real-time payments. Rather than seeing it as a threat to existing revenue models, banks should view the adoption of real-time payment systems as an opportunity to diversify their offerings and engage with a growing customer demand for faster, more convenient transaction methods. By embracing real-time payments, banks can remain competitive in a rapidly evolving digital landscape by increasing revenue streams through the displacement of cash and potentially creating new revenue streams through cross-border payments, and value-added services such as enhanced data analytics and customer insights.

Research participants have also highlighted the fact that banks should focus on the positive impact real-time payment offerings have in underserved communities as it allows South Africa to move towards its Vision 2025 goal of increasing financial inclusion.

c. *Environmental context*

Additional environmental factors play a significant role in influencing banks, merchants, and other financial service providers to offer real-time payment solutions. Among these, the regulatory environment stands out as a primary driver. Regulators have the power to create a fair and open competitive environment by establishing policies and guidelines that fintechs and other non-financial institutions them to offer competitive services alongside traditional banks.

Regulators also directly shape the operational landscape for banks by setting clear rules and standards regarding how payments should be processed, the fees that can be charged, and the security measures that must be followed. This includes the possibility of implementing pricing caps on transactions and mandating the functionality roll-out for PayShap to avoid feature and solution

parity. These regulations not only ensure consumer protection but also influence the business models of financial institutions.

5.9 Main themes identified throughout the study

Throughout the study, thematic analysis was employed to identify the key themes from the analysis of the propositions, participant responses, and relevant theoretical frameworks. Although many of these topics have been explored in detail above, the following are the key themes related to the barriers and enablers of real-time payment adoption identified throughout the research

a. ***The need for more assertive and active regulator***

A key theme identified throughout the study was the need for a more proactive and engaged regulatory body. Participants emphasised that a more assertive and involved regulatory presence is essential to ensure the effective adoption and implementation of real-time payment system. Data emerging from the study highlighted the need for clearer mandates regarding pricing regulation and an open and competitive regulatory framework encouraging fintechs and other non-financial institutions into the industry.

b. ***Cost and pricing as a factor impacting the adoption of real-time electronic payments***

An additional barrier to real-time electronic payment adoption from a South African perspective has been the high and inconsistent costs associated with the real-time payment offering PayShap. Participants highlighted that the costs are not aligned with the needs of targeting customers in lower LSM market segments. and are more akin to fees associated with RTC. Regulation such as pricing mandates have been proposed to address these concerns and provide increased oversight over financial institutions that may be overcharging for the service.

c. ***Acceptance and access as a factor impacting the adoption of real-time electronic payments***

Greater efforts need to be made to increase acceptance of real-time electronic payments by merchants. Merchants have been highlighted as playing a large role in facilitating the adoption of real-time payments, particularly in underserved communities. It is ineffective to attempt to use digital payment methods if they are not accepted by merchants, as the lack of acceptance undermines their utility and adoption. Participants highlighted high merchant service fees and capital-intensive acceptance infrastructure as a deterrent and suggested the need for convenient lightweight acceptance mediums such as QR codes.

d. ***Brand and user experience as a factor impacting the adoption of real-time electronic payments in South Africa***

A particular factor affecting the South African real-time payment offering is the fragmented user experience pertaining to PayShap. Results from the study emphasised that simple user journeys and an intuitive design are crucial to increasing the adoption the real-time service and emphasised that social factors such as the fear of being judged by others affect the usage of the service in public. Participants noted banks should place that greater effort on marketing the service and make it more accessible for users.

e. ***Ubiquity and the comparison to cash***

A critical factor highlighted from the research results was the comparison of instant payment mechanisms to cash. Participants constantly highlighted that to garner widespread adoption, real-time payment offerings must be as simple and cost effective as transacting with cash. Cash is often perceived as a “free” payment medium as it does not attract transaction costs or tax. Participants highlighted the indirect costs of using cash, such as security risks and the expenses associated with traveling to withdraw money. They emphasised the importance of increasing consumer education to build trust in digital payment

methods and stressed the need to offer real-time payment services for free as a strategy to boost adoption

f. ***Enabling non-financial institutions to compete in the payments industry***

Throughout the study fintechs were consistently recognised for their ability to deliver innovative and cost-effective real-time electronic payment solutions Fintechs were identified as key drivers of real-time payment adoption in countries such as India through their ability of reaching untapped markets and fostering innovation through competition with traditional financial incumbents. The findings underscore the importance of enabling fintech participation in the payments ecosystem to facilitate further development of national payment systems.

5.10 Conclusion

The study revealed numerous drivers and barriers impacting the adoption of real-time electronic payments in South Africa many of which are dependent on the country's unique social, regulatory, and economic landscapes. Whilst challenges such as high real-time payment transaction costs, perceived trust and security and insufficient customer education hinder the adoption of real-time payments, enablers such as increased regulatory oversight, partnerships between banks and fintechs and enhanced user experiences have been highlighted as practical ways to foster increased uptake.

The research revealed that countries like India and Brazil serve as practical case studies for South Africa to draw insights from in developing its National Payment System (NPS) and the real-time payment solution, PayShap, as they share similarities as developing nations. Additionally, enabling innovators, such as fintechs, to compete in the payments industry was identified as a means to stimulate greater competition and drive rapid innovation through competition.

CHAPTER 6. CONCLUSIONS & RECOMMENDATIONS

6.1 Introduction

Chapter 6 seeks to synthesise the insights gathered from the study to address each of the research questions outlined. The chapter begins by critically assessing the results in relation to the research questions, highlighting how the results obtained contribute to the understanding of each topic. Following this, practical recommendations are outlined providing insights informed by the research collected. The chapter concludes with suggestions for further research identifying limitations of the current study and proposing avenues for further exploration to build upon this work.

6.2 Conclusions regarding research question 1

Research question 1 aimed to understand “What are the enablers for real-time electronic payment adoption in South Africa? The research explored various factors that may act as drivers for real-time electronic payment adoption in South Africa and aimed to understand the current impact and identify initiatives that may need to be implemented to gain greater adoption in the future.

Analysis of the research concluded that both acceptance infrastructure and communications infrastructure are critical enablers for real-time payment adoption, however further efforts are required to optimise these drivers to become more accessible to all merchants and customers.

The need to understand the scalability of current acceptance infrastructure to accommodate South Africa’s growing transaction volumes was identified as a pain point for merchants and financial institutions alike. The study highlighted

lightweight and cost-effective acceptance mediums such as QR codes as a feasible solution. The research concluded that whilst acceptance infrastructure is a key enabler, acceptance of digital payment mediums, especially amongst informal merchants remains insufficient. Research participants highlighted this as an opportunity for fintechs to target underserved market segments and provide cost-effective acceptance solutions. Additionally, this remains a key area for collaboration between banks and fintechs to broaden acceptance and ultimately support the growth and development of resource-constrained communities.

Furthermore, in terms of communications infrastructure, whilst this remains a fundamental way to facilitate online and digital transactions, the research identified a significant shortfall in local strategies for enabling widespread connectivity and data access, particularly to conduct financial transactions. Whilst financial institutions such as banks have introduced initiatives such as zero-rating access to banking apps, this does not enable offline transactions preventing customers from completing their payment lifecycle without an internet connection. Collaboration with mobile-network operators to enable cost-effective mobile data plans for the purposes of carrying out financial transactions was suggested as a way to combat these limitations.

A clear and transparent regulatory framework was acknowledged as an enabler for real-time electronic payment adoption, particularly through the lens of guiding industry initiatives, however research gathered revealed that the role of the regulator may be more crucial than the framework itself. Consistent with the literature reviewed, the study indicated that removing barriers to entry and expanding the payments ecosystem to enable non-financial institutions to offer real-time payment services is a crucial driver for adoption. Research gathered expressed concern from financial institutions over insufficient regulation governing fintech's allowing them to have an unfair competitive advantage by fostering innovation without compliance responsibilities. In countries such as India, fintechs have significantly influenced the payments industry, driving innovation, providing real-time payment solutions, and contributing to increasing

financial inclusion (Prajapati, 2023). The Indian government has facilitated this technological acceleration by enabling a competitive regulatory environment through initiatives such as regulatory sandboxes, a strong public digital infrastructure and recognition of peer-to-peer lenders (Prajapati, 2023).

An additional enabler not highlighted through previous literature was the importance of clear user journeys and an intuitive user experience in driving real-time payment adoption. The research emphasised the importance of making the transactional experience straightforward and convenient to compete with traditional payment methods such as cash and card. It was identified that customers are more likely to abandon a real-time electronic transaction if the user experience is complex or lacks intuitive navigation. Additionally, the suggestion of separating PayShap from the banking apps of financial institutions and develop a dedicated PayShap app solely for the purposes of making real-time payments.

Throughout the study, various enablers to real-time electronic payment adoption were identified, many of which were consistent with existing literature whilst others were unique to the South African context. Enablers to real-time payment adoption in South Africa were identified as the following:

- A clear and transparent regulatory framework
- Increased regulatory oversight
- Cost effective and accessible acceptance infrastructure
- Widespread access to communications infrastructure
- Enablement of offline transactions
- Simple and intuitive user journeys
- Allowing fintech’s and non-financial institutions to provide real-time payment services
- Partnerships between non-financial institutions such as fintechs and banks

6.3 Conclusions regarding research question 2

Research question 2 sought to explore “what challenges hinder the adoption of real-time electronic payments in South Africa?”. By identifying the current barriers to adoption, greater efforts could be made to address and overcome these challenges.

Analysis of the research expressed that insufficient levels of digital and financial literacy pose increased challenges to the adoption of real-time electronic payments. Real-time payments in South Africa are primarily performed by accessing the PayShap functionality via a mobile device. The ability to conduct real-time payments therefore lies in the user’s ability to adequality operate mobile devices such as smartphones as well as navigate through a financial institution’s banking app to initiate a real-time transaction. Failure to navigate mobile technology and identify fraudulent payment schemes results in decreased adoption and discontinued use.

A key theme that differed from the literature was the extent to which digital and financial literacy hinder real-time payment adoption. Research highlighted that with the growth of smartphones and social media, even consumers in underserved markets are capable of effectively adopting and adjusting to new technology. Results therefore expressed that whilst decreased digital and financial literacy may pose a challenge, it does not appear to be as significant a barrier as suggested in the literature. This, however, has been identified as a function of clear user journeys and intuitive user experience and the straightforward ability to make real-time payments

Perceived trust and security were highlighted as significant challenges impacting the adoption of real-time electronic payments with results insufficient expressing consumer education as a contributor to decreased trust in digital financial systems. Furthermore, fears of sim-swaps and online fraud act as deterrents for real-time payment transactions especially where mobile numbers are used as proxies to identify a beneficiary’s account. The implementation of South Africa’s

Digital Identity was suggested as an initiative to authenticate and verify an individual to ensure that payments are initiated by and directed to legitimate participants. This initiative was proposed as a way to reduce fraud and build trust in real-time electronic payment systems.

An additional challenge identified by the study was the high transactional costs associated with South Africa's real-time payment solution, PayShap. Concerns about product cannibalisation, competition with other banking products and inconsistent interchange fees have resulted in elevated costs, which are ultimately being transferred to consumers. The study highlighted this factor as a major barrier to adoption. Additionally, given the low switching costs, consumers find it easy to resort to alternative payment methods such as cash or card. With competitive forces being inefficient in driving prices down, analysis of the research suggested that regulatory pricing caps could serve as a potential solution. This is a direct factor of enhanced regulatory oversight and increased involvement by the regulator.

Current challenges to real-time payment adoption identified by the study include:

- Perceived trust and security of digital payment systems
- A lack of consumer education
- High real-time payment transaction costs
- Product cannibalisation concerns by financial institutions
- Limited digital and financial literacy by consumers

Whilst the study underscored a variety of challenges currently hindering the adoption of real-time electronic payments in South Africa, a key insight was the potential for barriers to become enablers should they be resolved.

6.4 Conclusions regarding research question 3

Research question 3 aimed to understand "what is the impact of current strategies and initiatives to enable the successful adoption of real-time electronic

payments in South Africa?". By assessing current initiatives, further success factors may be suggested to foster widespread adoption of real-time payment systems in South Africa.

PayShap was implemented as the main initiative to drive adoption of real-time electronic payments in South Africa. This industry initiative was led by BankservAfrica and effected by all major South African banks. As of May 2024, PayShap enabled 30 million real-time transactions (BankservAfrica, 2024). Research indicated however, that many of these transactions have been RTC transactions moving over to the PayShap rail rather than new volumes. The study has highlighted the difficulty of building trust and decreasing cash usage, especially in lower LSM markets suggesting that PayShap has not yet achieved its goal of attracting new adopters, especially in its target markets.

The SARB vision 2025 highlighted various strategies aimed at enhancing the national payments system to help achieve goals such as improving financial inclusion, interoperability, and cost-effectiveness. One of the key strategies identified was the need to provide cost-effective and enhanced real-time payment capabilities. Research indicated that whilst PayShap was established to help achieve these goals, in its current state with minimal interoperability, inadequate transaction costs and a poor user interface it falls short of effectively fulfilling them.

A crucial strategy aimed at fostering increased collaboration between industry participants and increasing adoption of real-time electronic payments adoption is the establishment of the PEM. The research paper highlighted the importance of the regulator becoming more involved in the operation of the NPS and identified the creation of a public payment's utility as the first step of establishing increased regulatory oversight. The PEM programme acts as a catalyst for additional strategies designed to accelerate real-time payment adoption in South Africa, including enhanced fraud and security measures, electronic KYC, and enhancements of payments interoperability. To guarantee the success of the

programme however, ensuring sustained efforts and fostering industry-wide collaboration is essential.

The establishment of a "Digital Identity" was identified as a strategy to promote real-time electronic payment adoption by providing a secure and reliable means of identification especially for undocumented foreign nationals. Without government-issued ID's or passports, a digital identity could provide a recognised means of identity verification assisting in establishing financial credibility and conducting secure digital transactions. Real-time biometric verification provides a means to eliminate fraud from occurring during the transaction process, increasing trust in real-time payment systems. Additionally, the implementation of a digital ID enhances e-KYC efforts and facilitates the provision of tailored financial products enabling financial services providers to reach previously untapped markets.

6.5 Recommendations

6.5.1 *Recommendations to regulators*

Research noted that to adequately fulfil the goals established in the digital payment's roadmap and SARB Vision 2025, the regulator must enhance oversight and adopt a more proactive approach to governance by leading initiatives and formally endorsing them.

The most important initiative identified was enabling fintechs and other non-financial institutions to provide real-time payment services without having to depend on sponsoring banks to hold stores of value. This necessitates the establishment of updated and enhanced regulations to govern these entities while ensuring fair and equitable competition.

Analysis of the research also expressed further efforts which may be required to regulate pricing related to PayShap as relying solely on competitive pressures to reduce prices may prove inadequate. The study highlighted use cases such as

the implementation of UPI in India and the proactive involvement of the Indian government in reducing prices, ultimately leading to the product being offered free of charge.

Further efforts may be required to subsidise or reduce costs related to merchant service fees and acceptance infrastructure, particularly in underrepresented or underserved markets.

6.5.2 *Recommendations to banks*

The study highlighted that increased efforts are required to drive the adoption of PayShap and not overlook its potential due to concerns about cannibalising existing revenue streams.

Additionally, there is a significant need to develop targeted educational initiatives to inform consumers about safely conducting digital transactions and the benefits of using real-time payment systems.

An opportunity has been identified for further efforts to be made by banks to enable offline transactions. While zero-rating the use of banking apps eliminates data charges for users, an internet connection is still required to complete transactions.

The study also suggests that additional efforts are required to transition away from account based real-time payments and enable greater interoperability between payment mechanisms and stores of value to allow payments to be made without a participant having a bank account. Alternative stores of value such as digital wallets can also be used.

6.5.3 *Recommendations to fintechs*

Fintechs should focus on developing strategies to collaborate with banks, to offer access to real-time electronic payments in underserved areas whilst ensuring that banks do not perceive these partnerships as a threat to their existing business

models. Strategies to increase access may include developing alternative acceptance mediums or establishing methods for widespread data connectivity.

Additionally, fintechs can work to develop ways of providing real-time cross border payments. PayShap's current functionality is limited to local real-time transfers. Given the substantial presence of foreign nationals in South Africa, expanding digital payment infrastructure to facilitate cost-effective cross-border transactions presents an innovative approach to broadening real-time electronic payment adoption. Fintechs possess the resources and innovative capacity to leverage their internal networks for fund transfers, thereby reducing dependence on costly interbank transfer mechanisms.

6.6 Suggestions for further research

This research study identified the importance of fintechs in providing additional real-time payment solutions and reaching untapped markets. Whilst the role of these entities has been underscored, regulation governing their operation in providing real-time payments services is limited. With the SARB's intention of providing greater regulatory oversight of these entities, there are several potential areas for future research, including assessing the effectiveness of regulation in promoting fair and equitable competition between fintechs and banks, as well as evaluating the impact fintechs have had on the adoption of real-time electronic payments in South Africa.

Additionally, researchers have the opportunity to evaluate the success of PayShap in its maturity to determine whether the barriers hindering its adoption have been addressed and if additional efforts are required to encourage its use in South Africa.

It would be advisable for future researchers to conduct a longitudinal study, evaluating the relevance of identified barriers and drivers to real-time payment adoption in South Africa and examining whether they persist in having the same impact as observed during the original study.

Consistency table: research questions, propositions, data collection and data analysis

RQ #	State Research Question or Objective	Prop/hyp #	State Proposition or Hypothesis	Data collection detail	Data analysis method
1	What are the enablers for real-time electronic payment adoption in a market such as South Africa	1	Infrastructure is an enabler for the successful operation and adoption of real-time electronic payments	Interview guide questions 1, 7a, 7b, 7c	Thematic analysis
		2	A clear and transparent regulatory and governance framework is an enabler for real-time electronic payments	Interview guide questions 1, 3, 4	Thematic analysis

RQ #	State Research Question or Objective	Prop/hyp #	State Proposition or Hypothesis	Data collection detail	Data analysis method
		5	There are multiple enablers and barriers to real-time electronic payment adoption, some of which differ between countries	1-12	Thematic Analysis
2	What challenges hinder the adoption of real-time electronic payments in a market such as South Africa	3	Decreased financial and digital literacy are barriers to the success of real-time electronic payments in South Africa	Interview guide questions 2, 5	Thematic analysis
		4	Perceived trust and security affect the	Interview guide questions 2, 6	Thematic analysis

RQ #	State Research Question or Objective	Prop/hyp #	State Proposition or Hypothesis	Data collection detail	Data analysis method
			adoption of real-time electronic payments		
		5	There are multiple enablers and barriers to real-time electronic payment adoption, some of which differ between countries	Interview guide questions 1-12	Thematic analysis
3	What is the impact of current strategies and initiatives to enable the successful adoption of real-time electronic	6	The impact of current strategies and initiatives have not been evaluated against enabling real-	Interview guide questions 8, 9, 10, 11, 12	Thematic analysis

RQ #	State Research Question or Objective	Prop/hyp #	State Proposition or Hypothesis	Data collection detail	Data analysis method
	payments in South Africa		time electronic payments in South Africa		

Table 5: Consistency Table

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APPENDIX A - Research Instrument

Good day, thank you for taking the time to participate in this interview. As mentioned via the introductory email / phone call my name is Rushana Pillay and I am a master's student at Wits Business School. I am conducting research on the factors that influence real-time electronic payment adoption in South Africa. The purpose of this interview is to gain insights into the enablers, barriers, and strategies to adopting and employing real-time electronic payments.

Before we begin, I would like to assure you that the interview will be confidential and anonymous. When I share the results of the research study, I will not include your name or anything else that could identify you.

Opening Questions

- How long have you been involved in the payments / regulatory / financial services industry?

Main Interview Questions

1. What do you believe are the main enablers of real-time electronic payment adoption in South Africa?
2. What do you perceive the barriers of real-time electronic payment adoption in South Africa to be?
3. What type of regulatory environment will enable the successful adoption and implementation of real-time electronic payments in South Africa?
4. Are there any specific regulatory imperatives that need to be addressed to enable the successful adoption and implementation of real-time electronic payments?
5. What do you perceive the relationship between digital and financial literacy and the adoption of real-time payments to be?

6. How do you believe perceived trust and security influence the adoption of real-time electronic payments?
7. Infrastructure Questions

   For the purposes of this study, infrastructure encompasses payment acceptance mediums as well as internet infrastructure and real-time payment clearing and settlement infrastructure.

   Communications Infrastructure

   a. Do you believe that communications infrastructure such as access to internet and wi-fi is an enabler of real-time payment adoption in South Africa?
   b. Are you aware of any strategies that are enabling wide-spread internet or wi-fi connectivity to enable the adoption of real-time payments in South Africa? If so, do you believe that they are successful?

   Acceptance Infrastructure

   c. How do you believe current payments acceptance mediums affect the adoption of real-time electronic payments in South Africa? Is acceptance for real time payments sufficient – how can this be enhanced?
8. PayShap provides an instant digital alternative to cash that is safe and convenient. PayShap was born out of the Payments Industry-led Rapid Payments Programme (RPP), which officially kicked off in 2019 to collectively design a viable alternative to cash payments, with a core focus on humanising digital payments for all South Africans.

   What do you perceive the challenges to launching PayShap to be and how successful has adoption been?
9. Are there concerns that PayShap may cannibalise existing payment revenue streams (such as debit cards?) and how will this impact the roll-out of PayShap?
10. Does PayShap enable any of the SARB Vision 2025 objectives?
11. Are there any markets you view as an ideal case study that South Africa can emulate? If yes, how do you believe this can be achieved?

12. What further strategies or initiatives do you believe need to be implemented to enable the successful adoption and implementation of real-time electronic payments in South Africa?

APPENDIX B – Participant Information Sheet



Participant Information Sheet

Dear sir / madam

My name is Rushana Pillay and I am a Masters student at the University of the Witwatersrand, Johannesburg. My supervisor is Dr Kirubagaran Pillay. I am conducting research in about the enablers, barriers, and strategies to adopting real-time electronic payments in South Africa. The research project is in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business. The study title is "Investigating the factors that impact the adoption of real-time electronic payments in South Africa"

I am inviting you to take part in an interview. If you decide to take part, your participation in this research study will last about 1 hour. The interview will take place online or in-person at a location convenient for you.

With your permission, I would like to audio/video record the interview. This data will be stored in a secure repository. Only the researcher will have access to the data. Should you not wish for the interview to be recorded, detailed notes will be taken instead.

The interview will be confidential and anonymous. When I share the results of the research study, I will not include your name or anything else that could identify you.

If you decide to take part in the research study, it should be because you want to volunteer. You do not have to take part. You can stop being in the study at any time. You do not have to answer any questions if you do not want to. You will not get any direct benefits if you choose to join the research study. You will not lose any services, benefits, or rights you would normally have if you decide not to join. Taking part in the research study will not cost you anything. You will not be paid for being in this research study.

This research study will be written up as a research report. The report will be available on the university library website. If you would like to receive a summary of this report, I will be happy to send it to you.

If you have any questions during or afterwards about this research study, feel free to contact me or my supervisor on the details listed below. If you have any concerns or complaints about the ethical procedures of this research study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), telephone +27(0) 11 717 1408, email hrecnon-medical@wits.ac.za.

Yours sincerely,
Rushana Pillay

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APPENDIX C – Participant Consent Form



Consent Form

Investigating the factors that impact the adoption of real-time electronic payments in South Africa

Rushana Pillay

I, …….., agree to participate in this research project.

I agree to the following:

(Please circle the relevant options below)

The research study was explained to me. I understand what this study is about.	YES	NO
I understand that I can volunteer to take part in the study	YES	NO
I agree that the interview may be audio and/or video recorded	YES	NO
I agree that direct quotations from my interview may be used by the researcher in their research report	YES	NO
I agree that my participation will remain anonymous (my name or other identifying data will not be used by the researcher in their research report	YES	NO

…… (signature)

…… (name of participant)

…… (date)

…… (signature)

…… Rushana Pillay

…… (date)

APPENDIX D – Analysis and Coding of Data

This appendix provides examples of the qualitative analysis and coding conducted.

Participant	Perceived Enablers	Code
A	Meet regulatory requirements Meet international standards Drive industry forward	Regulatory
	Maintain competitive advantage in the market Meet regulatory requirements Satisfying customer need	Regulatory
	Safety for consumer (move away from cash) Cheap and quick Convenience	Cost
B	A need to replace cash - cheap alternative to cash	Cost
	Simple to use and intuitive user experience (e.g. QR codes and works on any phone)	UX / brand
	Safe and secure	Safety
	No tax implications for the sender and recipient	Tax

C	Simple, straightforward user journey - as simple as using cash - people don't want to look stupid using new technology - simple terminology for people to understand e.g. PayShap ID or Proxy	UX / brand
	Cost - “It must be cheap (low cost) as you are competing with cash and cash is seen to be free”	Cost
	Instant and accessible 24/7 much like cash - ubiquitous	Access
	Secure and low risk - Customers don't like to give bank details out due to fraud - Risk of SIM-swap fraud so customers are becoming more hesitant to share cell phone numbers	Safety
	Acceptance - “Do the merchants where I shop actually accept this type of payment. If they don’t what is driving me to use it?” - Big taxi ecosystem and informal sector - is it accepted there?	Acceptance
	Support from the regulator to encourage real-time payments	Regulatory
D	Collaboration of industry participants to drive real-time payments forward	Industry collaboration

	Proactive, assertive regulator to drive the industry and initiative	Regulatory
	Creating a single brand	UX / brand
	Keeping costs down to translate to a low-cost solution - Not passing costs onto consumers	Cost
E	Price / cost of solution - Initially priced very high especially relative to transaction values - Digital vs cash and perceived notion that cash costs nothing	Cost
	Client education and usage incentivisation	Education
	Client trust (as a result of education)	Trust
	Acceptance - Building acceptance that the retailer would need	Acceptance
	Incentive for undocumented foreign nationals to use digital payment mediums	Tax
F	Alignment amongst stakeholders - Aligning objectives to have a standard client experience	Industry collaboration

	Enabling regulatory environment - Proactive regulator that wants to solve things like financial inclusion, safe, interoperable, cheap	Regulatory
	Uniform client experience	UX / brand
	Improving trust to take up digital payment mediums	Trust
	Lowering cost of digital payment solutions - more as a regulators responsibility	Cost
	Ensuring safety and security – Regulators must take increased responsibility in driving trust	Safety
G	Cheap solutions (No fees or charges especially for lower LSM markets) - Transactions must feel as free as cash	Cost
	Education - Many consumers in lower LSMs e.g. SASSA grant recipients believe that if grants are not withdrawn out of accounts they will not receive it again next month	Education
	Trust - “Is my money safe in my bank account”	Trust
	Acceptance - Lack of acceptance points by merchants in rural / low LSM areas	Acceptance

	Convenience of transacting - Using something like an interoperable wallet so transactors don't need a bank account to transact	UX / brand
H	Pricing - low cost solution to compete with the perceived cost of cash	Cost
	Intuitive design of solution and user experience	UX / brand
	Brand - Single brand, easily identifiable	UX / brand
I	Availability of real-time payments on multiple channels to be accessed by all market segments - App, online, USSD	Access
	Functionality alignment and consistent user experience	UX / brand
	Appropriate pricing - Cheap for consumers - Appropriate interchange prices - Incentivisation of investment in real-time payments by regulator	Cost
J	Interoperability of the real-time payment system - Operable at any store of value	Access
	Low cost or cost that is marginal to any other form of making a payment (incl. cash or making a payment)	Cost

	Acceptance - must be accepted everywhere (acceptance network)	Acceptance
	Availability 24/7 365	Access
	Ease of usage of the system	UX / brand
	Access to wi-fi / data	Data access
	Electricity	Electricity access
K	Access to stores of value where you can store money digitally without having an account - Bank account, wallet etc	Access
	Acceptance - increase in acceptance of real-time digital payments by merchants - Main issue is that it is not cheap for merchants to accept (card)	Acceptance
	Trust and confidence of consumers in real-time digital payments	Trust

Participant	Regulatory Change needed	Codes	Quotes / Excerpts
A	Get South Africa out of grey listing	Operational	
	Need more directives / mandates	Assertive regulator	
	Bring fintechs into the ecosystem	Open ecosystem to fintechs and non-banks	
	Regulatory environment with a modernisation agenda and that meets FATF requirements	Modernisation of NPS	Meaning the regulator takes long to direct the industry on a requirement. An example is that we have been waiting over 6 years for an update to the National Payment System Act

B	Regulation around creating consumer protection and build in repudiation	Consumer price protection	
	Free data or zero rated real time payments	Subsidise costs - Data - Transaction fees	Shouldn't the data be free, maybe we need a regulation that says real-time payments should be zero-rated because think about this, there is no price for cash – nobody pays an issuing fee and an acquiring fee for cash,
	Regulate PayShap limits	Assertive regulator	
	Bring fintechs into the system	Open ecosystem to fintechs and non-banks	
	Mandate the acceptance of real-time payments	Assertive regulator	

C	More assertive regulator	Assertive regulator	In those markets, they regulator the plays a very strong role, either they mandate that something must be done and in everybody does it, they set the fees. So in Brazil, I think they said that the merchant fee for merchants to accept this and its tiny it's like three basis points
	Regulator to mandate things like merchant fees and interchange - mandated or subsidised pricing	Subsidise costs - data - transaction fees	
	Mandate feature / solution parity e.g. same features on PayShap across all banks	UX	
	Regulator to mandate things like the tokenisation of instant payments - tap your phone and pay as well as standard acceptance infrastructure	Assertive regulator	When there's universal acceptance that's mandated, the fintechs or these technology companies also play a big role in in enabling that acceptance footprint.
D	More proactive assertive regulator	Assertive regulator	
	Bring fintechs into the ecosystem - open up ecosystem	Open ecosystem to fintechs and non-banks	

	Creating a utility for payments in the SARB	Public Utility - driven by assertive regulator	
	A regulatory framework that allows for payment initiators. People want to initiate payments, however not all of them want to have a store value or run wallets or whatever but you need to create a framework that they can initiate payments without it being so onerous from a regulatory perspective	Open ecosystem to fintechs and non-banks	
	Prefunded settlement model - that would help non-banks operate in the system	Open ecosystem to fintechs and non-banks	
	Possibly mandate pricing however the banks would not want that because they can't pass those costs onto the consumer and make extra profits	Subsidise costs - Data - Transaction fees	

E	More assertive regulator that gets involved in the operation of the NPS	Assertive regulator	So possibly in summary a more active regulator and while one doesn't live in a market where it's over regulated but possibly a more firmer regulator and not necessarily not leaving the community to themselves who are possibly driving profit interests and commercial interests over and above the national good of affordable payments
	Digital financial ID to meet things like FATF requirements	Public Utility - driven by assertive regulator	
F	All banks must participate - leads to disjointed client experience	Assertive regulator	
	Low-touch pricing regulation by regulator	Assertive regulator	
	Regulator must drive trust by attaching name to some initiatives	Trust	
	Bring fintechs and other non-banks into the ecosystem including MNOs	Open ecosystem to fintechs and non-banks	
	Partnerships of private and public sector to drive financial inclusion	Partnerships	

G	Bring fintechs into the ecosystem and regulate them accordingly	Open ecosystem to fintechs and non-banks	
	Settlement account in PayShap	Public Utility - driven by assertive regulator	
	Creation of the public utility by purchasing majority share of BankservAfrica	Public Utility - driven by assertive regulator	We want in that public utility to have foundational enablers. We want to have a digital financial ID of all the transacting parties, and we want to have an eKYC, the verification of the party to the transaction
	All the different regulators must strike a balance	Partnerships	

	Assertive regulator with risk-based approach (carrot and stick)	Assertive regulator	
H	Bring fintechs and other non-banks into the ecosystem	Open ecosystem to fintechs and non-banks	
	Fintechs to access settlement (prefunded settlement model)	Public Utility - driven by assertive regulator	Expanding faster payment offering and the network, the access to that network to fintechs and non-banks
	Granting exemption for non-banks to hold stores of value	Open ecosystem to fintechs and non-banks	
	Interchange	Assertive regulator	
	QR standardisation that is interoperable	Acceptance	
I	Bring fintechs and other non-banks into the ecosystem	Open ecosystem to fintechs and non-banks	
	Regulation for fintechs to level playing field	Open ecosystem to fintechs and non-banks	
	KYC regulation	Modernisation of NPS	
	Settlement for fintechs	Open ecosystem to fintechs and non-banks	

	National Payments Act must change - oversight framework to manage fintechs, MNOs etc	Modernisation of NPS	
	Need interoperability between all stores of value such as mobile wallets and bank accounts	Interoperability	
J	Bring all stores of value into PayShap	Operational	
	Prefers less interventionist approach than what Reserve Bank is taking		
	Bring fintechs and other non-banks into the ecosystem including MNOs	Open ecosystem to fintechs and non-banks	
	Policy environment that allows for robust competition in the provision of low value retail payments - This happens by bringing non-banks into system to increase competition	Open ecosystem to fintechs and non-banks	
	Provide infrastructure for free - to do this the Reserve Bank has opted to buy BankservAfrica (Public Utility)	Public Utility - driven by assertive regulator	In order to provide infrastructure that has to be offered for free or near free, you can't ask the private sector to do that. You would have seen the announcement of the Reserve Bank subscribing for 50% of BankservAfrica shares, which is in effect the Reserve bank choosing to get into running retail

			payments on the basis that they can then provide this infrastructure for free.
	Partnerships of private and public sector	Partnerships	
	Government **intervention** is important however it is not necessary to run or build the system themselves as is being seen now	Assertive regulator	
K	Need to modernise regulation - past new NPS act	Modernisation of NPS	
	More stores of value not tied to a bank account - MNOs to provide a wallet service etc	Open ecosystem to fintechs and non-banks	
	Bring fintechs and other non-banks into the ecosystem	Open ecosystem to fintechs and non-banks	We can give, licences and put a proper regulation and oversight over entities like Vodacom or MTN. Effectively if you find some of these entities who are willing to step into offering financial services and they already have a large number of customers and people trust them

	Licences for non-banks to do acquiring services	Open ecosystem to fintechs and non-banks	
	SARB should regulate pricing on real-time payments	Assertive regulator	
	More assertive regulator	Assertive regulator	And what usually helps is when the regulator becomes a little bit more, I don't want to call it aggressive, but a little bit more pushy that they say, okay, it's not only the banks who can actually open accounts.

Regulatory Themes
Assertive Regulator - Mandate pricing - acceptance of real-time payments by more merchants - Mandate merchant fees and interchange - Mandate feature / solution parity - Create public utility in the SARB - Increased involvement of operation of NPS - Ensure that all banks are participating - Low-touch pricing regulation by regulator - Drive trust by promoting real-time payment brand initiatives - Mandate QR standardisation
Open ecosystem to fintechs and non-banks - Regulatory framework that allows for payment initiators - Pre-funded settlement model - Fair regulation for fintechs - Decrease barriers to entry for non-banks
Partnerships - Between private and public sectors - Between regulatory bodies - alignment between regulatory bodies
Operational - Non-banks to hold stores of value - Pre-funded settlement model - Payment initiators

APPENDIX E – Ethics Approval

Graduate School of Business Administration
University of the Witwatersrand, Johannesburg

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

Ethics Clearance Certificate

Ethics protocol number: WBS/DB1036571/430
This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below).

Project title	Factors that impact the adoption of real-time electronic payments in Sout Africa
Investigator / Researcher	Ms Rushana Pillay
Nature of Project	MM (Digital Business)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed confidentialty.
Issue Date of Certificate	03/09/2024
Expiry date	Date of submission of the project / research report
Chairperson	Dr Ayanda Magida ☎ +27 11 717 3953 ✉ ayanda.magida@wits.ac.za

Declaration by Researcher

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

I fully understand the conditions under which I am authorized to carry out the abovementioned research an 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.

RPillay — Signature

6 September 2024 — Date: