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NON-BANK AND BANK-LED ELECTRONIC BANKING POLICY: A COMPARATIVE STUDY BETWEEN KENYA AND SOUTH AFRICA

by

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Research report submitted in partial fulfilment of the requirements for the degree of Master of Management in Finance and Investment at the faculty of Commerce, Law and Management, University of Witwatersrand

March 2021

Supervisor: Professor Odongo Kodongo

DELARATION

I, Sabelo Mbhele, declare that this research report entitled ‘Non-Bank and Bank-Led Electronic Banking Policy: A Comparative Study between Kenya and South Africa’ is my own unaided work. I have acknowledged, attributed, and referenced all ideas sourced elsewhere. I am hereby submitting it in partial fulfilment of the requirements of the degree of Master of Management in Finance and Investment at the University of the Witwatersrand, Johannesburg. I have not submitted this report before for any other degree or examination to any other institution.

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Signed at Johannesburg on 31 March 2021

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ACKNOWLEDGEMENTS

Awu! Zaf'int'ezinkulu zeAfrika!
Isindiwe le nqanawa, 'de yazika,
Kwaf'amakhalipha, amafa nankosi,
Agazi lithetha kwiNkosi yeeNkosi.
Ukufa kwawo kunomvuzo nomvuka
Ndinga ndingema nawo ngomhla wovuko,
Ndingqambe njengomnye osebenzileyo,
Ndikhanye njengomso oqaqambileyo.
Makube njalo!

- SEK Mqhayi, 1943 (Ukutshona kukaMendi)

Dedicated to the memory of Maria Bavumile “MaMfusi” Mbele – my first tutor, the one who laid the foundation; and, Robert Mchitheni Mbele, who sacrificed everything for his children’s education.

ABSTRACT

The research study investigated the impact of electronic banking policy on the adoption and use of payment services offered by bank and non-bank institutions. Using the framework analysis proposed by Srivastava and Thomson (2009), the study employed the unified theory of acceptance and use of technology (UTAUT) as a thematic framework. Based on available research studies, three variables that are prominent in literature, within the financial services context, were identified. The variables are cost, an element of performance expectancy; ubiquity, elements of effort expectancy; and, the operating environment, termed facilitating conditions in the model. The study assessed the performance of banks and non-banks across these variables using published data and relevant research studies. The findings suggest that regulations in the payments industry, and in some respects the lack thereof, potentially had a negative effect on the adoption of non-bank offerings in South Africa. In contrast, the fairly accommodative regulatory approach of Kenyan regulators created a conducive environment for innovation and competition, resulting in increased adoption and usage amongst consumers, with a positive impact on financial inclusion. Most important is perhaps the observed increase in usage as a result of new innovations. This suggests that these innovations have brought about an improvement in the financial welfare of consumers.

Keywords: electronic banking policy, bank and non-bank institutions, cost, ubiquity, operating environment.

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LIST OF ABBREVIATIONS

AfDB	African Development Bank
AFI	Alliance for Financial Inclusion
ATM	automated teller machine
BBBEE	Broad-Based Black Economic Empowerment
CAGR	compound annual growth rate
CBK	Central Bank of Kenya
Cenfri	Centre for Financial Regulation and Inclusion
C-TAM-TPB	combining the Technology Acceptance Model and the Theory of Planned Behaviour
DT-SACCOs	deposit-taking Savings and Credit Co-operative Organisations
FSC	Financial Sector Charter
GDP	gross domestic product
GNI	gross national income
IDT	Innovation Diffusion Theory
IMF	International Monetary Fund
IS	information systems
MM	motivational model
MNOs	mobile network operators
MoF	Ministry of Finance
MTR	mobile termination rates
NPS	national payment system
PASA	Payments Association of South Africa
POS	point of sale
RSA	Republic of South Africa

RTC	real-time clearing
RTPS	real-time payment systems
SACCOs	Savings and Credit Co-operative Organisations
SARB	South African Reserve Bank
SCT	social cognitive theory
SRI	Solidarity Research Institute
TAM	technology acceptance model
TPB	theory of planned behaviour
TRA	theory of reasoned action
USD	United States Dollar
UTAUT	unified theory of acceptance and use of technology
WID	World Inequality Database

CHAPTER 1. BACKGROUND OF THE STUDY

1.1 INTRODUCTION

The use of electronic means to facilitate payments (i.e. transactional banking or payment services) is a subset of financial services. The ability of licensed commercial banks to collect deposits from the general public gives them an advantage in providing transactional banking services. The evolution of money, owing to technological developments, has reduced barriers for new entrants in the payments industry and created space for alternative business models to those adopted by traditional banks (Dupas, Karlan, Robinson, & Ubfal, 2018). However, the development of regulations in the financial service sector has not always kept pace with technological advances (Riley & Kulathanga, 2017) – particularly, with respect to the role of non-bank financial institutions in the facilitation of payments.

This research study investigated whether permitting non-bank financial institutions to provide electronic banking services has increased access and usage of financial services for the broader population, compared to bank-led regulatory environments. There are varying examples of accommodative and restrictive payment policies across the world (Batista, Simione, & Vicente, 2012). This study focused on Kenya, where regulators have developed policies that accommodate the entrance of non-bank players in the payments arena; and, South Africa, where regulators have restricted entry to non-bank players, opting for a bank-led partnership model. The research also studied the impact of electronic banking policy decisions on the expansion of services to the low-end of the market in both countries.

The South African Reserve Bank (SARB) views providing person-to-person payments, where a payer sends electronic value to a recipient who is then able to encash that value, as a deposit-taking activity (SARB, 2009). Accepting deposits from the general public is an exclusive function of licensed commercial banks. Given this interpretation, non-bank institutions must partner with licensed commercial banks to provide payment-related services.

Riley and Kulathanga (2017) highlighted that “new digital technologies often result in large numbers of low-value transactions and a vast number of players (both payment

system providers and their agent networks) with little, if any, prudential training, risk management abilities, or understanding of the risks and requirements of handling financial transactions". This observation provides plausible reasoning for the SARB's conservative stance on prudentially unregulated entities within the payments system.

In contrast, the Central Bank of Kenya (CBK) had no objections to M-Pesa's provisioning of money transfer services on the premise that the service did not violate the country's regulatory framework (Ministry of Finance (Kenya), 2009). Despite similar definitions of what constitutes deposit-taking activity in Kenya and South Africa, the Kenyan Ministry of Finance (MoF) outlined its reasons for approving M-Pesa's application (MoF (Kenya), 2009), indicating that the service did not:

- take money from the general public that is repayable on demand or at a predetermined date;
- take money from the general public to settle current account payments or cheque processing; and
- use the money for financial risk-taking activities – including lending and investments in order to generate a profit.

Furthermore, money collected by agents is deposited and must be held in a trust account with a licensed commercial bank in Kenya (MoF (Kenya), 2009). Amongst other things, the trust deed requires Safaricom's issuance of e-Money not to exceed the amount it receives in conventional money; not to exceed the credit balance of e-Money in the relevant M-Pesa account when processing payment transfers (MoF (Kenya), 2009). These interventions suggest that the MoF's definition of deposit-taking encompasses how the funds are used, in addition to which entity is authorised to store the "float".

Sultana (2009) differentiated between a bank-led model of mobile banking, where every customer has a direct relationship with a licensed commercial bank; and a non-bank led model, where there is no direct relationship with a licensed commercial bank. In the latter model, the non-bank financial institution owns the client relationship, with the commercial bank merely acting as a store of value for the "aggregate float" that accumulates in the system. In contrast, in the former case, every customer's funds are

held in a separately identifiable bank account at a licensed commercial bank. In this instance, the commercial bank holds the contractual customer relationship.

The entity in charge of the customer relationship has significant powers in terms of deciding prices, product design and distribution. The entity, or rather the collective of such entities, in charge of the customer relationship can decide the development path of the payments industry – including whether to support or hamper innovation within the sector (Sultana, 2009; Porteous, 2004). Notwithstanding the concerns around financial stability, perhaps this is too much power to bestow upon industry participants.

1.2 METHODOLOGY OVERVIEW

Using the framework analysis proposed by Srivastava and Thomson (2009), the study employed the unified theory of acceptance and use of technology (UTAUT) as a thematic framework. The thesis relies on desktop literature review and secondary data from various sources – including, financial services firms, regulatory authorities and developmental non-governmental organisations. The study identified three variables that are prominent in literature and important within the financial services context. The variables are cost, an element of performance expectancy; ubiquity, elements of effort expectancy; and, the operating environment, termed facilitating conditions in the model. The study assessed the performance of banks and non-banks across these variables in order to gauge the likelihood of financial services being adopted at a large scale. The thesis draws inferences from the systematic analysis of the literature and secondary data.

1.3 MOTIVATION OF THE STUDY

1.3.1 Economy and banking

South Africa's gross national income (GNI) per capita of USD13,000 is more than four times that of Kenya, which is at USD3,000 (World Bank Group, 2018). The World Bank classifies South Africa as an upper-middle income country and Kenya as a lower-middle income country. However, South Africa has a higher concentration of income in the upper-income groups. The top 1% accounts for 19% of income in South Africa,

compared to 15% in Kenya. Meanwhile, the bottom 50% only accounts for 6% of income in South Africa, compared to 14% in Kenya (World Inequality Database [WID], 2019). These statistics are unsurprising considering that South Africa is the most unequal country in the world (WID, 2019). That said, the average income level of the poorest half (i.e. the bottom 50%) of South Africans (USD1,700 per capita) is still almost double that of the poorest half of Kenyans (of USD900 per capita).

Given the higher levels of income, combined with a developed banking infrastructure, one would expect higher financial inclusion in South Africa compared to Kenya. Indeed this was the case prior to the introduction of M-Pesa, whereby the level of account ownership was 54% in South Africa, compared to 42% in Kenya (Demirgüç-Kunt, Leona, Dorothe, Saniya, & Jake, 2018) – mostly reliant on commercial banks. The accessibility of traditional banks is limited, primarily reliant on sparse bricks-and-mortar branches and automated teller machines (ATMs) – an expensive distribution model (Buri, Cull, Gine, Harten, & Heitman, 2018). As a result, there were many dormant accounts and limited use (World Bank Group, 2018).

On the contrary, M-Pesa improved access in Kenya to 82% in 2017 (from 42% in 2011), surpassing South Africa's 79% (from 54% in 2011) (Demirgüç-Kunt et al., 2018). The greatest contribution came from mobile banking accounts, which covered 73% of the population, versus 56% in the commercial banking sector. In addition, mobile banking not only increased access but usage as well. The volume of transactions in 2017 for M-Pesa was 1.5 billion units, compared to 215 million units for the commercial banks across all payment channels (CBK, 2018a). Notably, although access improved in both countries, usage remained low in South Africa, whereas it improved in Kenya (Demirgüç-Kunt et al., 2018).

The world-class status conferred upon the banking sector in South Africa is misplaced if the sector does not play a role in addressing the country’s developmental challenges. Moreover, if regulators ignore the country’s stage of development, they may resort to pursuing policies that hamper growth and innovation (Sultana, 2009; Lawack-Davids, 2012; McEvoy & Solin, 2009). This study argues that despite South Africa’s more developed financial services infrastructure (National Treasury (RSA), 2020), Kenya offers valuable lessons for South Africa, given the significant progress achieved in the area of financial inclusion, having adopted symmetrically opposed policy positions.

1.3.2 The impact of financial inclusion

Financial services offerings include access to credit, risk management services (e.g. insurance), savings and the facilitation of electronic payments. Numerous studies have assessed the impact of accessing credit on the financial well-being of low-income consumers (Brau & Woller, 2004). Credit risk, the ability to meet one's financial commitments, is a direct function of income. Therefore, lending to low-income individuals raises several ethical and prudential considerations. Firstly, the use of funds for consumption purposes (i.e. non-productive uses in the economic sense) creates doubt about the sustainability of lending to low-income consumers. Secondly, the realisation of higher default rates results in more expensive pricing relative to other customer segments, creating the impression of consumer exploitation.

There has been limited attention to the impact of other forms of financial access on the well-being of consumers. Therefore, this study focused on the facilitation of electronic payment services. Unlike loans, the cost of electronic banking services can be paid upfront, therefore eliminating the credit concerns associated with granting loans to low-income consumers.

In addition, some of the benefits that may arise from greater usage of electronic payment services include (i) enhanced efficiencies for consumers as result of the quicker transfer of funds over long distances; (ii) lower risk of theft or loss associated with transacting in physical currency; (iii) greater understanding of consumer spending behaviour, which can assist in expanding the product offering into riskier products – such as loans; and, (iv) the broader economic benefits from the digitisation of money, which increases the amount of money held in the formal banking system (Kessler et al., 2017a; Zandi, Singh, & Irvin, 2013).

Zandi et al. (2013) estimated the impact of electronic payments on economic growth. The research found that increased card usage added 1.6% to consumption and 0.8% to gross domestic product (GDP) in emerging markets. The researchers observed that because emerging market countries have lower card penetration, they reported sharper increases in economic benefits.

1.3.3 Financial services in Kenya and South Africa

Kenya's financial services sector comprises 43 banking institutions, and 177 deposit-taking Savings and Credit Co-operative Organisations (DT-SACCOs). In contrast, South Africa has 19 banks (excluding 15 branch offices, generally focused on corporate and investment banking), three mutual banks and three cooperative banks (SARB, 2018). The top five South African banks account for 90% of banking assets, compared to 47% in Kenya. National Treasury (RSA) (2020) and the International Monetary Fund [IMF] (2015) identified the dominance of a small number of institutions in the South African banking industry as a constraint for competition; and negatively impacting on innovation and the costs of financial services. Despite the higher number of banks in Kenya, Mdoe, Omolo, and Wawire (2018) found lack of competition in the Kenyan banking industry, characterised by 94% persistence in profitability.

The founding legislation for cooperative banks in South Africa was only passed in 2007 and the two existing cooperative banks were registered in 2011. The South African cooperative banks had 3,200 members in 2018, with assets of R154 million (c. USD10 million). In contrast, the Kenyan SACCO market has 4.8 million members and Ksh394bn in assets (c. USD3.6bn), which is equivalent to 11% of total banking assets. In South Africa, as in Kenya, cooperative banks can undertake deposit-taking activities from their membership base. These entities, therefore, can play a huge development role and provide access to many excluded customers (African Development Bank [AfDB], 2012). This study argues that despite the sophistication of financial services in South Africa, the market is highly concentrated, less dynamic than the Kenyan financial services market and does not adequately serve the needs of the domestic retail population. This is exacerbated by the complete reliance on commercial banks for all transactional services.

The differentiation between traditional commercial banks and other formal financial institutions is important because banks historically had significant barriers to access for consumers. Account opening requirements including proof of income, minimum opening and/ or operating balances were meant to exclude certain segments. Beck, Dermiguc-Kunt, and Martinez Peria (2007) assessed barriers to access from 209 banks in 62 countries. The authors found that minimum opening balances averaged 12% of GDP per capita, with a median value of 0.98%. The authors observed that "it

is the banks in the small financial systems of Sub-Saharan Africa that consistently impose the highest barriers on customers, arguably to recover their relatively high fixed costs".

Although significant progress has been made in expanding financial access to low-income consumers, usage of accounts remains a challenge. This study argues that the full benefits of account ownership should be reflected by increased usage of accounts – emanating from safe, convenient, appropriate and affordable service offerings (Demirgüç-Kunt et al., 2018; World Bank Group, 2018; Beck et al., 2007).

1.3.4 Financial inclusion and the regulatory environment

The Broad-Based Black Economic Empowerment (BBBEE) Act was enacted in 2003 with the aim to increase the economic participation of black South Africans, who constitute the majority of low-income earners due to the legacy of apartheid. The promotion of access to financial services is one of the objectives of the policy. The Financial Sector Charter (FSC), which was implemented in 2004, outlined the guiding principles for the sector's financial inclusion objectives. The FSC, a product of industry participants across business and labour, set targets for the attainment of "effective access" by expanding the reach of financial services to the low-income segment. These targets included:

> *"being within a distance of 20 kms to the nearest service point at which first-order retail financial services can be undertaken, including ATMs and other origination points… aimed at and are appropriate for individuals who fall into the income categories of LSM 1-5.*
>
> *The charter further encouraged "non-discriminatory practices; appropriate and affordably priced products and services for effective take up by LSM 1-5; and the structuring and description of financial products and services in a simple and easy-to-understand manner".*

The FSC defined first-order retail products and services as "transaction products and services, being a first order basic and secure means of accessing and transferring cash for day-to-day purposes". The language of the FSC supports the assertion that the transactional services can act as a gateway to other financial products (Dupas et al., 2018). More importantly, the objectives set by the sector are reflective of the three

variables proposed in this thesis, as driving usage of financial services. The variables are affordability, ubiquity, and a supportive operating environment for industry participants. The result of these initiatives was a low-cost transactional account, targeted at the low-income segment, namely the Mzansi account.

The Mzansi account had defined product features, as shown in Table 2.1:

Table 1.1: Product features of the Mzansi account

Card-based	• Debit-card linked account • Fully functional across banks in South Africa (i.e. interoperable)
No penalty for using other banks' infrastructure	• Waiver of interbank fees (in respect of ATM transactions)
Affordable	• Agreed pricing principles across banks (using a defined transaction basket) • Capped fees, lower than conventional accounts
No monthly or management fee	• Not applicable to Mzansi accounts
One free cash deposit	• One free cash deposit transaction per month.
Use of Post Office branches	• Funds withdrawals and basic enquiries at a Post Office (irrespective of bank)

Source: Adapted from World Bank Group, 2018.

Despite many desirable product features, the Mzansi accounts failed. The banks complained that the accounts were loss-making. According to Barnard (cited by Fisher-French, 2012), the Mzansi accounts "had high cost origination in-branch, servicing was expensive and customer utilisation was very low". Also fearing cannibalisation of premium accounts by low-cost offerings, banks apply complex pricing formulas to transactional banking services (Competition Commission (RSA), 2008; Solidarity Research Institute [SRI], 2017). In South Africa, the Competition Commission (RSA) (2008) found that, on a supposedly low-cost account, several banks charged low transactions fees on the first few transactions "but penalise subsequent transactions by charging more than they would typically charge on other accounts". This was supported by Manyanga (cited by Fisher-French, 2012) who stated that the Mzansi account "becomes expensive with a high number of transactions, or if you have more than R15 000 in the account". The SRI (2017) suggests that wide pricing discrepancies of this nature are designed to influence consumer behaviour. These pricing strategies are not driven by competitive market dynamics.

Another notable initiative is the South African government-sponsored programme that has issued more than 10 million biometrically secure debit MasterCards for the

purpose of social transfer payments. This initiative has increased the proportion of financially included South Africans; however, it is debatable whether such limited access products provide effective financial inclusion (World Bank Group, 2018). Kessler et al. (2017a) indicated that most of the money deposited is withdrawn in full immediately after it is received.

There is recognition within the South African government of the formal banking industry's inability to address the needs of the low-income segment. The government aims to prioritise

> *"broadening access to banking services to poorer people and lowering costs through a combination of competitive pressures and reducing other infrastructure costs".*

However, this preferred approach has not proved successful. Riley and Kulathanga (2017) proposed that regulators should be "open-minded and allow markets to come up with solutions that are workable, by allowing for pilot efforts that can be scaled up and then ensuring that broader regulatory parameters are appropriately adapted".

Access to financial inclusion for the majority of Kenyans began with the launch of M-Pesa. It is evident that M-Pesa had a transformative effect on the Kenyan financial services landscape. Safaricom's offering has since expanded from being a remittance service to other financial services – including loans, savings products (in partnership with banks) and insurance.

The CBK issued two no-objection letters before the pilot phase and, subsequently, before the launch of M-Pesa. This allowed M-Pesa to operate and grow, proving that payment services can be provided to the low-income segment at affordable rates and in a manner that meets their needs – a service that is accessible and appropriately designed. The offering relied on the services of agent networks to lower costs (Alliance for Financial Inclusion [AFI], 2010; Hughes & Lonie, 2007).

Commercial banks were prohibited from employing the services of third-party agents. The necessary amendment to the Banks Act was enacted in 2009; and, the CBK issued agency banking guidelines in 2010, three years after the launch of M-Pesa. These developments paved the way for commercial banks to contract third parties for

the purpose of agency banking. This gap in regulatory clarity created an uneven playing field and favoured M-Pesa, which was not bound by regulations stipulated under the Banks Act.

The Kenyan regulators only applied formal regulation to mobile banking in August 2014, with the enactment of the National Payment Systems (NPS) Regulations. Its aim was to operationalise the NPS Act of 2011 and provide for the authorisation and oversight of payment service providers; and, the designation of payment systems, payment instruments and Anti-Money Laundering measures (CBK, 2015). At this point, the mobile payments industry in Kenya had grown to Ksh225bn per annum, with 25 million accounts (CBK, 2018). The industry, and arguably M-Pesa, had already surpassed a scale of operations that is systematically important to the Kenyan economy.

The CBK permitted payment service providers to operate. The watch-and-learn approach was needed to foster an environment of growth and innovation. However, this study does not propose the CBK as a model for regulatory excellence. Perhaps the CBK was too accommodative in that it allowed Safaricom to write the rules and for far too long. On the other hand, the overly cautious approach of South Africa (and many other developed banking systems) does not allow space for innovation. Regulators need to balance risk management with the benefits that could flow to the population from such innovations.

1.3.5 The electronic payments system

A payment system can be defined as consisting of a set of instruments, procedures and technologies that support the circulation of money. Lai (2017) differentiated between wholesale payment systems, involving large values between banks and large corporations; and retail payment systems, involving consumers transacting in high-volume low-value payments. This research study focused on consumers' ability to access and use retail payment systems.

There are three broad activities involved in fulfilling electronic payment obligations:

- *Payments Acquiring* – involves activities that are required in order to complete the transaction at the point of sale (POS). These include PIN authentication, funds confirmation against the account and transaction approval.
- *Payments Clearing* involves all activities performed from the time a payment instruction is made until the transaction is settled. It includes the exchange of information between banks; and, the ring-fencing of funds until settlement.
- *Payments Settlement* is the final and irrevocable transfer of funds from the payer to the receiver's account. This is facilitated by a system operator, such as a central bank or card network provider, who advises the net settlement position between banks.

The clearing and settlement of payments will differ based on the nature of the payment system. In an open-loop payment system, the transfer of funds can be between accounts at different institutions, through the use of switching networks such as those provided by card payment network providers (e.g. VISA or Mastercard), automated clearing houses (e.g. BankServ in South Africa and PesaLink in Kenya).

In order to be effective for the purpose of remittances, retail payments have to be settled in real time – that is to say, once a payment instruction has been sent, transactions have to be cleared and settled in a short time frame (e.g. real-time clearing (RTC) in South Africa settles within 60 seconds). Lai (2017) identified a number of factors that may dissuade banks from investing in real-time payment systems (RTPS) systems. Firstly, larger banks will lose a competitive advantage because RTPS technology will level the playing field. Secondly, cannibalisation of existing revenues could occur as customers migrate to more efficient platforms. Thirdly, banks would lose float revenue (i.e. interest earned) when funds are no longer stored in each bank's suspense accounts prior to settlement. Lastly, immediate settlement will require large security investments for effective fraud detection and prevention.

South Africa's RTPS, real-time clearing (RTC), launched in 2006, one of the first in the world, but adoption rates were initially poor amongst banks and consumers (BankservAfrica & PASA, 2017). Although adoption rates have improved more recently, Ehrlich and Elliott (2019) identified the high fees charged by many of the

banks and the slow adoption of the system by banks as an impediment to its growth. In Kenya, Genesis Analytics (2017) highlights that PesaLink, the country's RTPS that launched in 2017, was met with resistance by the commercial banks, "over concerns that it would cannibalise their fee revenues from existing payment products". Large commercial banks have a vested interest to maintain the status quo. Regulators have to be more proactive in creating space for fair competition and allowing innovation (Jordaan, cited in Businesstech, 2018).

An alternative is a closed-loop payments system, which requires both the payer and receiver of funds to be on the same platform. Lai (2017) noted that "settlement is a lot simpler and can be achieved in one step via internal book transfer as transactions are managed by one entity". Closed-loop systems tend to be cheaper for the same reason. M-Pesa is a closed-loop system that could only be provided between Safaricom customers (i.e. payer and receiver had to be M-Pesa accountholders). Van Zyl (2016) pointed out that Safaricom's near monopoly status was a pre-condition to M-Pesa's success. In order to achieve scale rapidly, M-Pesa benefitted from a large captive market. This has important policy implications for regulators looking to replicate Kenya's financial inclusion success.

The interoperability and speed of execution of payment systems is important in achieving universal take-up (Kessler et al., 2017a; Beck et al., 2007). Regulators must create a supportive operating environment that doesn't rely on monopolistic powers – as was the case with M-Pesa's closed-loop system.

In addition, regulators also need to be mindful of the risks. There needs to be a strong focus on providing training to agents; and improved measures to provide security for consumers, including the use of biometrics for as a security feature, as was the case in India, with great success.

1.4 STATEMENT OF THE PROBLEM

This study investigated the effect of non-bank and bank-led electronic payment policies on the expansion of financial inclusion in Kenya and South Africa.

South Africa's bank-led payment policies require the participation of a prudentially regulated financial institution in order to offer payment services. On the contrary, Kenya permits non-bank entities to provide payment services. The difference between the two countries is the central bank's interpretation of deposit-taking activity; and more importantly, the impact of such activities on financial sector stability. The SARB's resistance to untested innovations and new players in a traditional arena of commercial banks is rational, given the risks and challenges this may present (Riley & Kulathanga, 2017). However, effective regulators are accommodative of these innovations, balancing risks against opportunity, permitting pilot cases and scaling up regulations to manage systemic risks (Riley & Kulathanga, 2017).

South Africa's status as a regional economic powerhouse, with developed financial infrastructure – policies, technologies and market participants – could easily mask exclusion. It is easy to conclude that a world-class commercial banking system provides adequate services. This notion is further supported by high levels of measured access to the South African banking industry (Demirgüç-Kunt et al., 2018). However, closer scrutiny is needed to understand the quality of access – that is to say, whether banks provide "effective access". Moreover, the country's high level of inequality means that solutions that are not appropriate for the low-income segment can be imposed without consideration for its requirements. Low-income countries, like Kenya, which have faced similar challenges and adopted unconventional policy responses, offer valuable parallels. The challenges of access and adequate services are similar at the bottom of the pyramid. This study explored the outcomes of bank-led and non-bank-led payment services and aimed to offer a sensible framework for assessing the benefits of the parallel policy options and their impact on financial inclusion.

1.5 RESEARCH OBJECTIVES

Through synthesising research studies from academics and practitioners, this study proposed three demand-side variables that have been identified by researchers to drive usage of banking services, namely affordability, ubiquity (of transacting channels) and a supportive environment (Richard & Mandari, 2017; Demirgüç-Kunt et al., 2018; Dupas et al., 2018; Ehrlich & Elliott, 2019; IMF, 2015; National Treasury (RSA), 2020).

Firstly, the study sought *to investigate whether there are significant differences in affordability between bank and non-bank payment services*. Low-income consumers are, by definition, sensitive to costs. In order to promote large-scale uptake and usage of financial services, payment services have to be affordably priced.

Secondly, the study aimed to *investigate whether the ubiquity of payment channels is improved in a bank-led or non-bank led payments environment*. Given the pervasive nature of cash in emerging market economies (Unnikrishnan, Larson, Pinpradab, & Brown, 2019), the availability of convenient and easy to access cash-in and cash-out service points is crucial in ensuring a large-scale uptake and usage of payment services (Richard & Mandari, 2017; Kessler et al., 2017a).

Thirdly, the study *investigated the availability of market infrastructure that allows banks and non-banks to offer services*. In this regard, the researcher focused on two important attributes, namely interoperability and speed of execution. These factors have close ties to performance and effort expectancy. Speed of execution reduces time delays and improves performance expectancy whilst interoperability increases ubiquity and, thus, improves effort expectancy.

The ultimate evidence that payment services are affordably priced, conveniently accessible and suitable for consumer needs is increased usage. The study argues that usage is an important indicator of financial inclusion, compared to access. Access is a prerequisite for financial inclusion. However, the success of financial inclusion programmes rests on their ability to improve the daily lives of consumers. Lastly, *this study investigated whether there has been a change in usage between Kenya and South Africa, as a result of non-banks in the payments industry*. Until consumer behaviour shifts in significant ways in favour of electronic transactions, the benefits of bank account access will remain debatable. Usage of financial services is key!

CHAPTER 2. LITERATURE REVIEW

2.1 INTRODUCTION

It has been argued that bank-led policies give excessive powers to banks, with the ability to impede innovation by means of a de facto veto in terms of pricing decisions, access to payments infrastructure and product design (Suarez, 2016; FinMark Trust, 2017). On the other hand, more accommodative policies are said to permit the participation of non-bank players, on a level playing field with commercial banks, in the provision of payments (Suarez, 2016; FinMark Trust, 2017; Hota, 2016). South Africa adopted restrictive payment policies, whereas Kenya opted for a more flexible approach. The rapid adoption of M-Pesa in Kenya relative to its poor uptake in South Africa raises questions about contributing factors to the discrepancies between these two markets. Industry participants and numerous authors have identified the restrictive regulatory environment in South Africa, amongst other reasons, for the failure of non-bank players in the person-to-person (P2P) payments arena (FinMark Trust, 2017; National Treasury (RSA), 2020; World Bank Group, 2018). The literature was reviewed in order to establish a framework for testing these claims by identifying the key drivers of transactional payments adoption; highlighting differences that could potentially explain discrepancies in outcomes; and proposing areas for further study.

The study relied on the unified theory of acceptance and use of technology (UTAUT) to propose and assess variables that could impact transactional payments adoption. The UTAUT model has been used extensively to predict and explain the adoption of new technologies (Oliveira, Faria, Thomas, & Popovic, 2014; Savic & Pesterac, 2019). The literature review draws on a wide range of research – including writings from academia, regulators and in-practice – to identify the key variables impacting on adoption within the financial services context. The study identified *affordability* (a factor of performance expectancy), *ubiquity* (a factor of effort expectancy), and the *operating environment* (a factor of facilitating conditions). A fourth variable, *social factors* (dealing with the impact of peers – friends and family – on intention to use technology), has been omitted as the paper deals with supply-side variables. These variables are theorised to contribute meaningfully in the prediction of adoption within the payments environment. The factors identified are likely not exhaustive but, based on a review of

relevant research, constitute the most impactful and prominent factors that could affect payments adoption (Demirgüç-Kunt et al., 2018; FinMark Trust, 2017; FSD Kenya, 2016).

The UTAUT model incorporates gender, age, experience, and voluntariness of use as contributing factors in moderating the model constructs on behavioural intention and usage. This makes the model appealing in assessing the operating environment in emerging markets, like Kenya and South Africa, with nuanced social factors that have not been explicitly factored in existing studies.

The focus in financial inclusion literature is shifting away from access towards effective usage (Kessler et al., 2017a; Beck et al., 2007). This research study contributes to this momentum by placing emphasis on the assessment of sustained use (i.e. growth in the volume of transactions), as opposed to access (i.e. growth in the number of accountholders). A further appeal of the UTAUT model for the purpose of this study is the measurement of behavioural intention, as an antecedent to usage. The model found strong support for the direct link between behavioural intention and usage.

Whereas the UTAUT model is generally applied to micro settings – at an organisational level – this study used the model as a theoretical lens and applied it to a macro country-level setting in order to identify and discuss potential policy interventions. By doing so, the study assumed that the macro-level objective factors that are theorised to impact each construct will be impactful at a micro-level. Therefore, the UTAUT model was used in this study in line with its intended use – i.e. to assess the adoption of new technologies.

The research study contributes to closing the knowledge gap as it has adapted an existing theoretical framework for use in assessing the impact of policy on payments adoption. Although numerous authors have studied broader mobile banking adoption using the UTAUT model, the researcher of this study could not identify any that incorporated macro-level inputs and the impact of policy on adoption. The study firstly identified the most significant contributors to performance expectancy, effort expectancy and facilitating conditions in the financial services context at a macro-level. Future research should develop studies that test the validity and predictive ability of

the factors identified in respect of product adoption and usage within the payments context.

2.2 UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY (UTAUT)

Venkatesh, Morris, Davis, and Davis (2003) compared eight theoretical technology adoption models that predict the intention and usage of new technologies. The authors used the empirical and conceptual similarities across the eight models to formulate the UTAUT. These eight models include[1]: (1) the theory of reasoned action (TRA), (2) the technology acceptance model (TAM), (3) the motivational model (MM), (4) the theory of planned behaviour (TPB), (5) a model combining the technology acceptance model and the theory of planned behaviour (C-TAM-TPB), (6) the model of PC utilisation, (7) the innovation diffusion theory (IDT), and (8) the social cognitive theory (SCT).

The UTAUT proposes three direct determinants of intention to use (performance expectancy, effort expectancy, and social influence); and, a fourth construct, facilitating conditions, as a direct determinant of usage behaviour. The role of intention as a predictor of behaviour (i.e. usage) is critical and has been well-established in information systems (IS) and the related studies (Venkatesh et al., 2003). The theory further states that intention is a direct determinant of usage behaviour. The following sub-sections present these constructs as defined by Venkatesh et al. (2003), whilst integrating relevant research and variables in the payments context.

[1] A description of each model and the definitions of the core constructs is attached as Annexure A of the thesis – taken directly from Venkatesh et al. (2003).

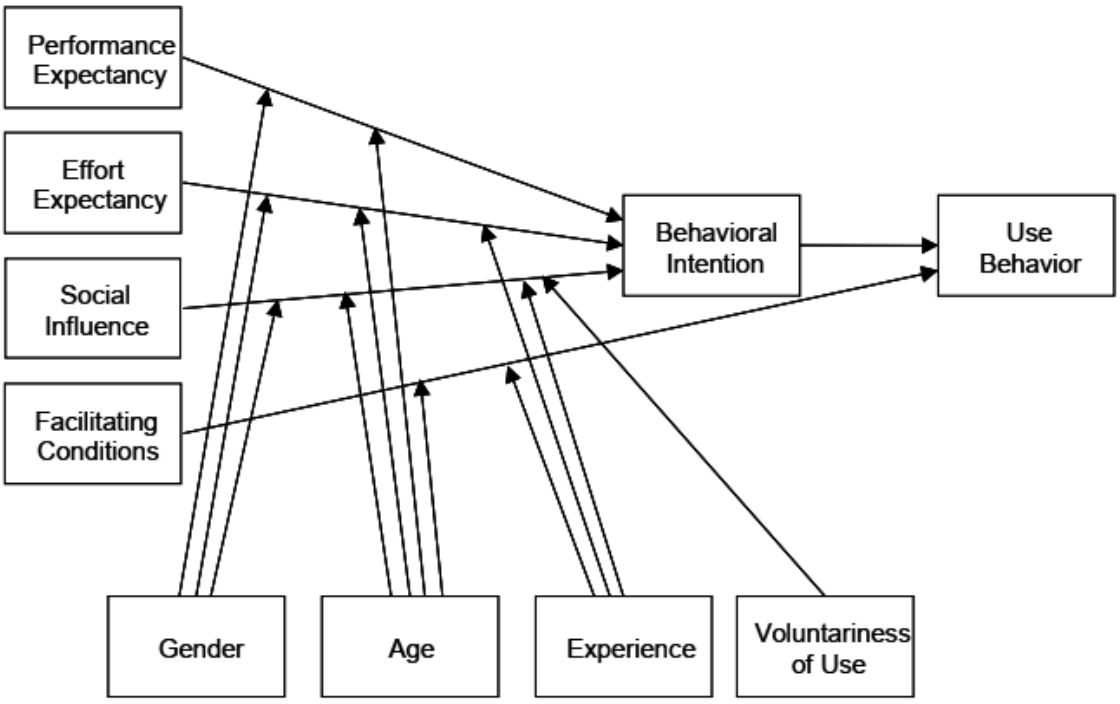


Figure 2.1: UTAUT model and its determinants

Source: Venkatesh et al., 2003.

2.3 PERFORMANCE EXPECTANCY IN A PAYMENTS CONTEXT

Venkatesh et al. (2003) defined performance expectancy as "the degree to which an individual believes that using the system will help him or her to attain gains in job performance". The authors derived this construct directly from perceived usefulness (from the TAM and C-TAM-TPB models), extrinsic motivation (MM), job-fit (MPCU), relative advantage (IDT) and outcome expectations (SCT). The common defining feature between these constructs is their focus on the impact of new technologies on job performance. The performance expectancy construct, or its equivalent, within each individual model was found to be the strongest predictor of intention – in both voluntary and mandatory settings.

This study proposes affordability as impacting on job performance or the attainance of goals within the payments context. The goal of conducting payments – whether cash or electronic – is to move value from a payer (person A) to a recipient (person B), as efficiently as possible, with minimal loss of value (i.e. costs) and time.

Numerous studies that have been concluded on mobile banking adoption using UTAUT include cost and speed of execution as considerations under performance

expectancy (Savic & Pesterac, 2019). Demirgüç-Kunt et al. (2018) found that cost and distance (a factor of effort expectancy, as discussed below), cited by about a quarter of respondents, were the most common reasons, after lack of income, provided by respondents for their unbanked status.

2.4 EFFORT EXPECTANCY IN A PAYMENTS CONTEXT

Venkatesh et al. (2003) defined effort expectancy "as the degree of ease associated with the use of the system". This construct is derived from perceived ease of use (TAM), complexity (MPCU) and ease of use (IDT). These individual variables sought to measure the perceived amount of difficulty associated with a particular system.

The TAM model explicitly distinguishes between mental and physical effort. Within the context of payments, this study proposes the use of literacy levels to gauge physical effort, whereas accessibility or distance is used to the gauge mental effort. Mobile banking adoption studies support this approach, with questions around accessibility and mental effort prominent in the formulation of measurement scales for effort expectancy (Savic & Pesterac, 2019).

Research done by Mastercard and the World Bank[2] found that more than 90% of transactions are concluded in cash in developing countries. This underscores the importance of cash deposit and withdrawal facilities (i.e. branches, ATMs and agents) in promoting financial inclusion. Consumers who use electronic banking services must have the confidence that they can easily and conveniently convert electronic money into physical currency, as and when required. The study argues that a key catalyst for the adoption of mobile payments is seamless integration with existing transacting methods. Therefore, in the context of payment services, particularly those targeted at low-income consumers, it is important that transacting infrastructure is ubiquitous (Richard & Mandari, 2017; Ehrlich & Elliott, 2019; Kessler et al., 2017a).

The second aspect of effort expectancy, within a payments context, deals with mental effort. The unbanked population is more likely to have low levels of education.

[2] Cited by Unnikrishnan et al. (2019) in the report: How Mobile Money Agents can improve Financial Inclusion.

Demirgüç-Kunt et al. (2018), and Maitlo, Kazi, Khaskheley, and Shaikh (2015) found that demographic factors are linked with the adoption of different banking channels. Intuitively, the ability to use technology (e.g. ATMs or internet banking) would require from the consumer, a certain level of literacy and numerical skills. Kessler et al. (2017b) found that low-income customers “did not trust ATMs and find them too complex”. Dupas et al. (2018) found similar results in the rural areas of India, where PMJDY accountholders viewed agents as more helpful than ATMs, which were not trusted (to the same extent) by the villagers.

2.5 SOCIAL INFLUENCE IN A PAYMENTS CONTEXT

Social influence is defined as the extent to which one values the views of others about their own usage of a new system. The social influence constructs were derived from TRA, TAM, TPB/ DTPB and C-TAM-TPB (named social influence), MPCU (social factors) and IDT (image). The author found that none of the social influence constructs were significant in voluntary contexts (Venkatesh et al., 2003).

Social influence is important in the early stages of new technology adoption, when the majority of users lack experience and/or information about a specific innovation – placing reliance on the opinions of peers (Dordevic, Zoran, & Marinkovic, 2020).

The impact of social influence in technology acceptance was found to be “complex and subject to a wide range of contingent influences” (Venkatesh et al., 2003; Savic & Pesterac, 2019). Three mechanisms of social influence on behaviour were discussed in the research – compliance, dealing with social pressure and found to be significant in mandatory settings; internalisation and identification are significant, in voluntary settings, concerned with influencing belief structures and responses to social status gains from technology use. This study has not included the social factors viable in the analysis.

2.6 FACILITATING CONDITIONS IN A PAYMENTS CONTEXT

Facilitating conditions is defined as “the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system” (Venkatesh et al., 2003). This construct was derived from five of the eight predecessor models – perceived behavioural control (from TBP, DTBP and C-TAM-TBP), facilitating conditions (MPCU) and compatibility (IDT).

This study proposes three important aspects of facilitating conditions from a payments perspective – namely, interoperability (a driver of ubiquity, as discussed under the performance expectancy section); and, real-time clearing (a driver of speed of execution, also discussed under performance expectancy).

The interoperability of payments infrastructure is a key factor in improving facilitating conditions (World Bank Group, 2018; Kessler et al., 2017b), it had less significance in Kenya due to the size and nation-wide coverage that Safaricom enjoys (MarketLine, 2015; Iraki, 2016). Venkatesh et al. (2003) found that when both performance expectancy and effort expectancy constructs are significant, facilitating conditions become less significant in predicting adoption and usage. Policymakers have to carefully consider their unique circumstances when they consider interventions that improve facilitating conditions in their own markets.

Similarly, M-Pesa's closed-loop system meant that payments could be instantaneous, without reliance on RTC systems – thus delivering a fast speed of execution, without the requisite support infrastructure. Both ubiquity and speed of execution are key aspects of a favourable operating environment for electronic payments (World Bank Group, 2018; Kessler et al., 2017b; MarketLine, 2015). The success of M-Pesa without this key infrastructure has more to do with its own unique circumstances, which favourably impacted its ability to deliver performance and effort expectancy. However, policy interventions may be necessary to achieve the same level of success in other markets – and perhaps, to limit concentration risk associated with a few large players.

This study aimed to shed light on the impact of policy choices, particularly bank and non-bank led regimes, on the adoption of electronic payments. Payments policy can have the greatest impact on performance and effort expectancy.

2.7 APPLICATION OF UTAUT

Savic and Pesterac (2019) tested the UTAUT to determine which factors affect behavioural intention and use of mobile banking services in Serbia. The results showed that all the factors have a statistically significant impact on intention to use mobile banking. Performance expectancy was identified as the most important factor whilst effort expectancy had the weakest impact. In addition, the value of the R-square

coefficient explained 74% of the variability in the dependent variable (i.e. intention to use).

Indeed, low income consumers are, by definition, sensitive to price due to lack of income. The importance of cost as a construct (of performance expectancy) cannot be overstated in making services accessible to financially excluded consumers. Moreover, transactional banking fees are customarily charged as a percentage of transaction value, with a minimum fee payable. Given this pricing design, costs become prohibitive at a certain threshold of value – that is to say, when the transaction amount is too small, the service is rendered inefficient and perceived usefulness is diminished from a consumer's perspective. This impacts low-income consumers disproportionately.

2.8 DEVELOPMENTS IN THE REGULATION OF NON-BANK FINANCIAL INSTITUTIONS

Burns (2018) compared mobile banking adoption in the non-bank supportive markets of Kenya, Uganda, Tanzania, Zimbabwe and Somalia against the bank-led markets of South Africa, Botswana, Nigeria and Ghana. The author concluded that "the mobile money revolution provides… the most compelling modern illustration of the failure of the state-led approach and the success of market-oriented approaches to financial sector development".

Ley et al. (2015) found that the impact of capping fees in the European Union will be modest on banks (c.3% of revenue loss after catering for volume increases). Shabgard (2020) used the error correction based autoregressive distributed lag model to study the short- and long-term relationship between interchange fees and retail prices in Spain. The author found that retailers in Spain shared part of the reduction in merchant services charges with cardholders by reducing retail prices. Veljan (2018) combined industry observations with literature to argue that regulators did not achieve stated objectives. The author found that there is no evidence to support that fee reduction resulted in improved social welfare, whilst the assumption of increased volumes partially offsetting lost revenue did not materialise.

The impact of allowing greater participation by non-bank players could have a more material effect than regulating prices (Ley et al., 2015). Regulators in some markets

are introducing regulations to cater for non-bank participation in the payments industry. Dias and Staschen (2019) identified new licensing categories “as key regulatory enablers” for financial inclusion. These entities can accept deposits from the public (within limits), however may not on-lend for credit purposes. Such entities include Payment banks (as is the case in India) which are licensed banks, and Electronic Money Issuers (as is the case in the European Union) which are non-bank entities who can (a) offer payment services; and (b) value storage of third-party funds.

Ley et al. (2015) noted that regulatory changes, coupled with technological advances, create room for new and innovative players to enter the payments industry. The positive evidence around the ability to scale up distribution quickly (Kessler et al., 2017a; MarketLine, 2015); and lower costs (Dias & Staschen, 2019; World Bank Group, 2018) should encourage policymakers to create conducive operating environments for these new players.

2.9 STRENGTHS AND WEAKNESSES

Venkatesh et al. (2003) tested and validated the UTAUT model using empirical data, confirming the robustness of the proposed determinants. The results indicate that UTAUT outperformed the eight individual models – accounting for 69% of the variance (adjusted R-squared) in usage intention.

However, some criticism has been levelled against the model. Van Raaij and Schepers (2008) researched virtual learning acceptance amongst Chinese MBA students using an extension of TAM, one of the eight models used to derive UTAUT. In choosing TAM, the authors were critical of the UTAUT model. Firstly, UTAUT was considered less parsimonious than the TAM models, despite its high R-square coefficient – which was achieved by moderating the constructs with up to four variables. The authors were also critical of the social influence and facilitating conditions constructs, whereby they questioned how combining “a wide variety of (‘disparate’) items can reflect one single psychometric construct”.

These sentiments were echoed by Li (2020) who argued that UTAUT sought to improve the low predictive power of TAM by artificially using moderators to achieve high R-square coefficient. The author argued that the “excessive number of variables would make UTAUT impractical for real-life researches”.

2.10 CONCLUDING REMARKS

Researchers of earlier technology acceptance models envisaged that measures used to predict and explain system use would be of great practical value (Davis, 1989). Organisations could benefit by developing a better understanding of user demand for new design ideas, whilst providing a framework for product consumers looking to evaluate these new product offerings. Venkatesh et al. (2003) stated:

> *"UTAUT thus provides a useful tool for managers needing to assess the likelihood of success for new technology introductions and helps them understand the drivers of acceptance in order to proactively design interventions targeted at populations of users that may be less inclined to adopt and use new systems".*

The reference to "managers" suggests that the model was developed for use in micro-settings. However, the researcher of this study argues that macro-level policy decisions will have an impact at an organisational level. Relevant to this discussion, are the findings of Venkatesh (2003) that facilitating conditions (i.e. the operating environment) become significant when performance and effort expectancy are not modelled. Similarly, this study argues that when the operating environment is not supportive, within a payments context, performance and effort expectancy are negatively affected leading to poor adoption of new technologies.

The policy environment for non-bank players has been fairly restrictive in South Africa. Commercial banks have benefitted from these regulations, by maintaining large market share, without the pressure to broaden effective access due to lack of competition. In Kenya, M-Pesa has transformed the financial services landscape. However, its dominance bestows it unique advantages which may not be replicable or desired from a policy perspective. The UTAUT model provides a structured approach to engage these arguments.

CHAPTER 3. METHODOLOGY

3.1 INTRODUCTION

The research study aimed to highlight reasons for the poor adoption of payment services. The first research objective was to assess the affordability of payment services between banks and non-bank institutions. Secondly, the study assessed the impact of non-bank financial institutions on ubiquity with the intention to highlight challenges associated with the adoption of payment services. The third research objective was to assess the operating environment with the aim to highlight areas of policy that can facilitate the improvement of adoption – focused on interoperability and speed of execution. Lastly, the fourth research objective was to assess whether there are observable improvements in usage between non-bank and bank-led markets. This is important because ultimately the aim is to increase – not just access to financial services – but integration of payment services into people's daily lives.

The research followed the framework analysis approach as proposed by Srivastava and Thomson (2009). The approach comprises a five-step process:

1. "Familiarization (with the available data);
2. identifying a thematic framework;
3. indexing;
4. charting; and,
5. mapping and interpretation" (Ritchie & Spencer, 1994 as cited by Srivastava & Thomson, 2009).

The appeal of the framework analysis is that it allows for a methodical and comprehensive treatment of the data (Srivastava & Thomson, 2009). The study employed the unified theory of acceptance and use of technology (UTAUT) as a thematic framework. This provides a conceptual framework for organising prominent ideas and the presentation of findings. The thesis relies on desktop literature review and secondary data from various sources – including, financial services firms, regulatory authorities and developmental non-governmental organisations.

3.2 DATA COLLECTION

The research data used for the research included individual company data (in some cases aggregated to form a market view), as well as aggregate market data provided by the relevant authorities. The following data was collected at an individual entity level:

- Bank pricing data: published annually by the individual banks, in both Kenya and South Africa, on their respective websites.
- South African branch and ATM data: The distribution infrastructure (i.e. ATMs and branches) data in South Africa was collected from the annual reports of each individual bank. The five largest banks own the majority of distribution points and are considered adequately representative of the market.
- South African retail stores: These include the large retail store chains groups that have partnered with the banks to provide over-the-counter financial services – namely, Checkers, Spar, Pep, and Pick n Pay. The agent network has historically been limited to the large retail store networks in South Africa. The data on store footprint is published for each retailer in the annual reports to investors.

The South African bank data (pricing data, as well as branch and ATM data) includes the five largest banks by assets (accounting for 90.5% of the market by assets); and, the Kenyan bank data (pricing data only) comprises the seven largest banks by assets (accounting for 47.2% of the market by assets).

The following data represents aggregate market data:

- Kenya distribution channels data: The CBK publishes distribution network data for the whole industry. In addition to traditional bank distribution channels, such as ATMs and branches, the CBK also publishes figures for non-traditional distribution points related to agent networks.
- Demographic data: Pertains to the population older than 15 years in each country, corresponding to the year of analysis. The data was collected from the Kenyan National Bureau of Statistics and Statistics South Africa, respectively.

- Usage data: Includes volumes of transactions in each country. The data was collected from the Payments Association of South Africa (PASA) and the Central Bank of Kenya (CBK), respectively. (“CBK”).

The research also drew heavily on previous studies. The desktop research component included newspaper articles, industry research, academic articles and research from regulatory bodies.

3.3 IDENTIFYING A THEMATIC FRAMEWORK

Venkatesh et al. (2003) developed the UTAUT as “a unified model”, combining eight pre-existing technology acceptance models. UTAUT was found to outperform the eight original models, with an adjusted R-square of 69%.

This study used the UTAUT model as a valuable guide in organising ideas and data in respect of payments adoption. Similar to other forms of innovation, electronic payments are underpinned by technology. Mobile banking is the most widely researched field of study where the UTAUT model has been applied and is closely related to the research topic (Oliveira et al., 2014; Savic & Pesterac, 2019).

The UTAUT model was formulated with four core determinants of intention and usage, and up to four moderators (age, gender, voluntariness and experience) of key relationships. The four core determinants and their application in this research are discussed below:

- Performance expectancy: is the utility of using a particular technology – and describes the extent to which it benefits the user (Venkatesh et al., 2003; Savic & Pesterac, 2019). In this research, cost or affordability was linked to the performance expectancy variable.
- Effort expectancy: is the degree of ease associated with use of the system (Venkatesh et al., 2003). The ubiquity variable (or proximity to service channels) was linked to effort expectancy in the research.
- Facilitating conditions: is “the extent to which technical infrastructure exists to support system use” (Savic & Pesterac, 2019). In this regard, the research focused on factors that impact speed of execution (real-time clearing) and interoperability (payments switching capabilities).

- Social influence: the degree to which the perceptions of others impact the user's likelihood to adopt new systems (adapted from Venkatesh et al., 2003).

This research study did not assess the social influence variable (found to significant in mandatory settings). In addition, the research did not consider the impact of moderating factors. This is because the research focused on supply-side variables and the impact of regulators and industry participants on financial inclusion.

Demographic factors (such as age and gender) tend to be prominent in financial inclusion studies (Abel, Mutandwa, & Le Roux, 2018; Zins & Weill, 2016). The exclusion of these factors does not discount their importance. Their absence is a potential shortcoming of the research. Future research should consider supply and demand-side variables together in order to formulate comprehensive policy responses.

Venkatesh et al. (2003) described UTAUT as a valuable aid for those "needing to assess the likelihood of success for new technology introductions and helps them understand the drivers of acceptance". This could help managers and policymakers to "proactively design interventions, targeted at populations of users that may be less inclined to adopt and use new systems" (Venkatesh et al., 2003).

3.4 INTERPRETATION OF FINDINGS

The research combined the last three steps of the framework analysis proposed by Srivastava and Thomson (2009). This section involves organising (or mapping), presenting (including, graphing, and summarising findings) and interpreting the data.

The research used a combination of descriptive analysis and document review to achieve research objectives. The research drew on related studies, in practice and academia, to support or challenge the findings suggested by the descriptive analysis.

3.4.1 Research Objective 1: Affordability

The mean, median and range of bank charges (across the selected banks and non-bank institutions) for deposit and withdrawal services per distribution channel (i.e. ATMs, branches and agents) were determined and are presented in Chapter 4. The same metrics for non-bank financial institutions are also presented.

The median price per channel was graphed for Kenya and South Africa. This is intended to show the ranking of channels by cost across banks (i.e. ATMs and branches) and non-bank institutions (i.e. agent networks).

3.4.2 Research Objective 2: Ubiquity

Distribution points per capita were calculated by dividing the number of branches, ATMs and agents' networks by the population figure (15 years+).

For South African data, the store networks of the retail chains were counted in full, from the year they began offering financial services. For instance, Checkers was the first group to offer over-the-counter financial services in 2006. The full Checkers store network was added to the alternative distribution network from 2006 onwards.

In Kenya, the CBK publishes aggregate market data for banks (i.e. branches and ATMs) and alternative channels (i.e. agents).

3.4.3 Research Objective 3: Facilitating conditions

For this section the study assessed the operating environment – focusing on the payments support infrastructure available in both Kenya and South Africa – looking at RTPS (which impact speed of execution), and the payments switching capabilities (which impact the interoperability of payments channels between service providers).

The research relied primarily on a document review analysis of the operating environment and published bank data regarding pricing of immediate payments.

3.4.4 Research Objective 4: Adoption and usage

For this part the study assessed usage in Kenya and South Africa – using account usage and dormancies data from Demirgüç-Kunt et al. (2018).

In addition, volumes per capita were calculated and compared across both countries. This data is a proxy for usage. This is aggregate market data published by the CBK and PASA for Kenya and South Africa, respectively.

The findings are presented in the next chapter, Chapter 4.

CHAPTER 4. RESEARCH FINDINGS AND PRESENTATION

4.1 RESEARCH GOAL 1: AFFORDABILITY

The study argues that by reducing the amount delivered to the recipient, the cost of payment services impact performance expectancy. In essence, cost is a measure of (in)efficiency within the payments context.

Due to the pervasive nature of cash in emerging markets, consumers are more likely to adopt and use electronic payment systems when they have easy access to deposit and withdrawal facilities (FinMark Trust, 2017; BankservAfrica & PASA, 2017; Ley et al., 2015; Kessler et al., 2017a). That is to say, electronic payments have to be well-integrated with existing payment methods (i.e. cash) in order to gain widespread usage. Consumers need the assurance that electronic money will be universally accepted or that they can easily convert e-money into physical currency as and when required.

Commercial banks utilise various channels to provide transactional banking services, including ATMs (some of which they own, and others belong to competitor banks), branches and third-party agents. The channels allow consumers to perform functions including cash deposits and withdrawals, as well as transactional payments.

Tables 4.1 and 4.2 compare transactional banking fees for withdrawal and deposit services across numerous channels for both commercial banks and non-bank financial institutions. There are two broad observations from the data, which are discussed in the sub-sections that follow.

- Firstly, there is a significant difference in pricing related to the distribution channel. For instance, branch usage is much more expensive than ATM usage.
- Secondly, banks charge consumers a higher fee for using a competitor bank's distribution network. This means that although infrastructure may be interoperable, costs may prohibit usage and limit ubiquity.

Lastly, competition is perhaps more effective than regulation in reducing prices (Camner, Sjoblom, & Pulver, 2009; AFI, 2010; Batista et al., 2012). The entrance of

Table 4.1: Cost of transaction in South Africa

	Mode of measurement	RSA			
		BANKS			NBFIs
		ATM - own	ATM - other	Branch	POS
Send (Deposit)	Median	5,23		24,31	10,00
	Mean	7,31		33,57	10,00
	Range	[5.00 - 12.21]		[12.49 - 71.55]	10,00
Receive (Withdrawal)	Median	6,5	16,3	58,3	1,60
	Mean	7,91	14,96	62,47	1,67
	Range	[6.05 - 10.45]	[8,83 - 19,45]	[50,36 - 71,55]	[1,31 - 2,00]
TOTAL	Median	**11,73**		**82,61**	**11.60**
	Mean	**15,22**		**96,04**	**11.67**
RANK					
Send (Deposit)	*Median*	*2*		*3*	*1*
Receive (Withdrawal)	*Median*	*2*	*3*	*4*	*1*
TOTAL	*Median*	*2*		*3*	*1*

Table 4.2: Cost of transaction in Kenya

	Mode of measurement	KEN				
		BANKS			NBFIs	
		ATM - own	ATM - other	Branch	Agents	M-Pesa
Send (Deposit)	Median	0		0	0	0
	Mean	0		0	0	0
	Range	n/a		n/a	n/a	n/a
Receive (Withdrawal)	Median	30	200	200	25	50
	Mean	31,625	163,75	185,69	25	50
	Range	[30,00 - 35,00]	[0 - 250,00]	[0 - 430,00]	25	50
TOTAL	Median	**30,00**		**200,00**	**25,00**	**50,00**
	Mean	**31,625**		**185,69**	**25,000**	**50,000**
RANK						
Send (Deposit)	*Median*					
Receive (Withdrawal)	*Median*	*2*	*4*	*4*	*1*	*3*
TOTAL	*Median*	*2*		*4*	*1*	*3*

Source: Company pricing data published annually (both Kenya and South Africa)

non-bank players transformed the Kenyan banking environment – leading to fast-tracked development of infrastructure and a reduction in prices. When the incumbent dominant players have significant market power – these changes are not easily achieved – as is the case in the South African environment (Iraki, 2016; Competition Commission (RSA), 2008).

4.1.1 Distribution model as a cost driver

The analysis of transactional banking fees, both in South Africa and Kenya, indicates that commercial banks charge more per channel than non-bank providers charge (Table 4.1, Table 4.2, and Figure 4.1). For instance, third-party payment providers (such as retailers, agents – acting on behalf of the banks – and M-Pesa) are generally cheaper than traditional bank-owned distribution channels (such as ATMs and branches).

The pricing of branch services is the most expensive – 7.6 and 6.7 times the price of the cheapest service in South Africa and Kenya, respectively (Figure 4.1). This reflects the inefficiency of branches as a distribution model (Oracle, 2017).

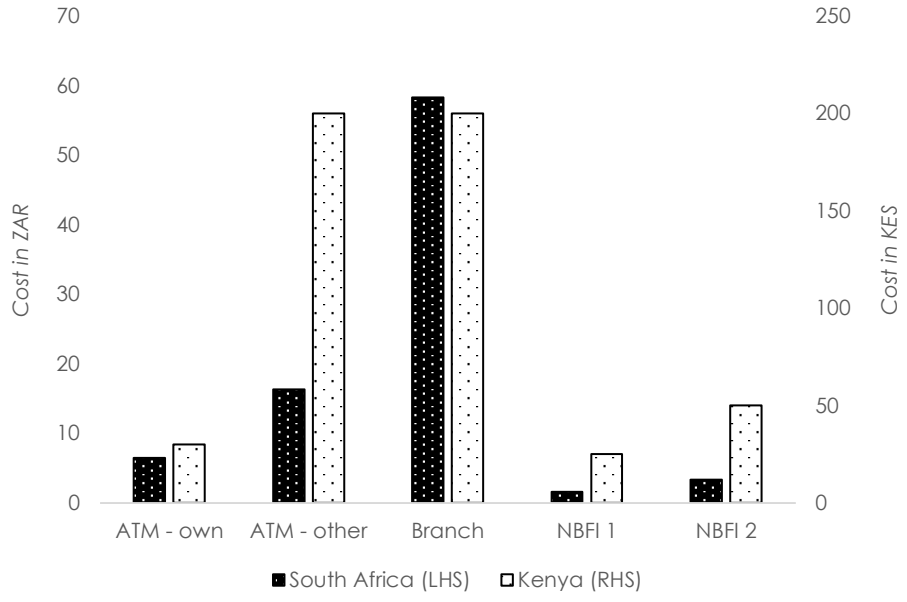


Figure 4.1: Cost per channel in Kenya and South Africa

Source: Company pricing data published annually.

Retail banking operating costs largely relate to the cost of providing services to consumers by means of operating an extensive branch network (Kessler et al., 2017a). The contribution of Staff Costs and Occupancy Costs to a bank's operating expenses is greater than 50%, both in Kenya and South Africa (CBK, 2018b; SARB, 2018). The cost-heavy operating models of traditional banks are not suited to serving consumers at the low-end of the market. For instance, Kessler et al. (2017b) estimate that to reach the bottom quintile, a commercial bank's operating costs per consumer would have drop by more than half. The AfDB (2012) found that banks cannot profitably provide services to remote rural areas due to large fixed investment cost required.

In contrast, non-bank financial institutions offer payments as value-added services, complementing their primary operations. The Centre for Financial Regulation and Inclusion [Cenfri] (2013) cited Shoprite Checkers in 2007, at the launch of its money market desk as follows, the service "forms part of the Group's non-core value-added strategy aimed at increasing consumer traffic in stores…turning outlets into destination stores". Similarly, Pick n Pay, another big retail store chain in South Africa, cited customer convenience as the main motivation for its decision to offer financial services (Pick n Pay, 2018). This is in sharp contrast with commercial banks, where excessive consumer traffic, especially at the branches, may affect the customer experience through long queues. Banks discourage this through punitive pricing (SRI, 2017; FSD Kenya, 2019). Table 4.1 and Table 4.2, showing the price of deposit and withdrawal services at a branch, relative to other channels, demonstrate this phenomenon.

Coincidentally, the cheapest mode of payment is performed through third party agents. The use of third-party agents allows commercial banks to significantly lower the cost of providing such services (Kessler et al., 2017a; Ley et al., 2015). Thus, commercial banks can focus on more complex activities, which a third-party agent might not have the capacity to perform (Kessler et al., 2017a; Ley et al., 2015). Third party agents comprise the large retail chains in South Africa, with significant scope to expand. In contrast, in Kenya, third-party agents are more widely spread – including the street vendors and the small corner shops.

4.1.2 Impact of competition on cost

The introduction of M-Pesa to the Kenyan market was transformational in terms of reducing the cost of access to payments for many Kenyans (AfDB, 2012). The low

cost of M-Pesa is estimated to have increased the number of Kenyans who have access to transactional accounts by 58% (AfDB, 2012). M-Pesa continually sought to increase access, reducing the minimum transaction amount from KES50 to KES10 a few years after its launch. The fee amongst registered users for low-value transfers (under KES500) was also reduced. The revised tariff structure opened the door for (even lower) low-value payments, potentially attracting more low-income consumers. The ability to reduce costs and process low-value transactions supports the argument in favour of non-bank participation in the provision of payment services (Mas & Morawczynski, 2009). It is also good for financial inclusion at the low-end of the market. Camner et al. (2009) found that the M-Pesa deposit fee (free of charge), transfer fee and withdrawal fee (together constituting the cost of making payments) were “substantially lower than other alternatives” in Kenya and Tanzania.

Initially the commercial banks were opposed to the arrival of M-Pesa citing unfair competition. However, the regulator did not yield to pressure, thus forcing the commercial banks to adapt. The first bank-mobile network operator (MNO) partnership was between Safricom and Equity Bank, offering the M-Kesho low-cost bank account. The account had no account opening charge, no periodic fees and no minimum or maximum balance. The accountholders were also provided access to savings, loans (subject to credit approval) and insurance (Mbiti & Weil, 2011).

Interestingly, the terms and pricing of this account were significantly different to traditional banking terms and pricing at the time. The introduction of MNOs, as competitors in financial services, changed the competitive landscape. Requirements such as minimum balances, monthly management fees etc. were common amongst banks (Mas & Morawczynski, 2009; Beck et al., 2007).

In addition, banks also acted to improve other aspects of their product offering in order to compete – for instance, improving the speed of executing transactions. This is discussed in more detail in Section 4.3, dealing with facilitating conditions.

The regulatory environment in South Africa dictates that NBFIs should offer payment services in conjunction with a licensed commercial bank. This arrangement does not encourage competition and may inhibit innovation (Competition Commission (RSA), 2008). Kessler et al. (2017b) found that bank fees, in South Africa, as a share of

disposable income were at four times the level of any mature market. In addition, Ketley, Davis, and Truen (2005) found that in comparison to India, Kenya, Malaysia, Mexico, and Nigeria, only South African banks charged a fee for cash deposits. The findings are consistent with the Competition Commission (RSA) (2008) which found that South African banks charge a fee for transaction services for which there is no explicit fee in many other countries.

Indeed, this research study supports these findings. Tables 4.1 and 4.2 show that only South African banks charge deposit fees), whereas the service is free of charge in Kenya. Given the role of banks as intermediaries, charging a fee for deposits is peculiar.

Moreover, South African banks, with the exception of Capitec, do not pay interest to customers on funds kept in transactional accounts – despite the banks earning interest on the float (SRI, 2017). The regulatory environment in South Africa has shielded banks from competition and stifled innovation that emanates from players outside the sector (Competition Commission (RSA), 2008; World Bank Group, 2018).

4.1.3 The cost of interoperability

Tables 4.1 and 4.2 show that the average bank charges consumers 6.7 and 2.5 times more – in Kenya and South Africa, respectively – to use a competitor's ATM, relative to their own network. Transactions that are initiated with a third-party bank are called off-us transactions – signifying that the transaction has been acquired off, or outside, the issuing bank's infrastructure. Acquiring banks (i.e. those owning the infrastructure – ATMs, POS devices, etc.) charge the issuing bank a fee in order to dispense the cash in an ATM transaction. The fee is agreed upon between banks through industry negotiations. This arrangement provides institutions with large distribution networks, significant market power and the ability to determine costs for smaller players (Competition Commission (RSA), 2008; National Treasury (RSA), 2020).

The issuing bank will earn an income regardless of whose infrastructure is used for the transaction. This arrangement guarantees the banks that are big enough of income without having to compete with the consumers. The issuing bank effectively "owns the customer". The Competition Commission (RSA) (2008) found that almost two thirds of the carriage fee goes to the issuing bank despite the cash being withdrawn at a

competitor's ATM. Price competition would be more effective if the dispensing bank charged the consumer directly and the carriage fee was abolished or capped by regulation (Ehrlich & Elliott, 2019; Competition Commission (RSA), 2008).

In the European Union, the Interchange Fee Regulation caps the fees charged between banks for inter-bank electronic payments. The fee cap is imposed on the issuing bank (where the consumer banks) rather than the acquiring bank (where the merchant banks).

Similarly, FSD Kenya (2007) found that Kenyan "switches are either expensive or have high interchange fees for ATM withdrawals". For instance, the default international ATM interchange is USD1 (KES110). Visa has the lowest cost base of the switch providers in Kenya because it operates from an existing global infrastructure that has scale and requires no additional investment (FSD Kenya, 2007). However, interchange fees agreed between member banks are considerably higher than for Kenswitch.

This moral hazard is not unique to the financial services industry. Other sectors with similar oligopolistic features may be prone to the same. In the Telecoms industry, Safaricom and Telkom opposed the Kenyan government's bid to lower interconnect fees (a charge for connecting calls across mobile networks, similar to bank interchange fees), whilst Airtel was expected to benefit from the increased competition (Okuttah, 2011).

Following the cross-network tariffs review of 2009, Airtel reduced its call rate to other networks by 50% – forcing other operators to respond. The network operator proposed that the mobile operators create a clearing house for the mobile money transfers in order to level the playing field in the industry.

Hawthorne (2018) studied the effects of lower mobile termination rates (MTR) in South Africa's telecoms market. The author found that off-net prices reduced as MTR costs reduced and the gap between on-net and off-net prepaid prices narrowed as MTR costs were reduced. His research recommended that "regulators concerned about high retail prices and differences between on-net and off-net prices should reduce MTRs".

This research highlights that similar challenges to those found in commercial banking exist in the telecoms industry. Therefore, services provided by MNOs could be faced with the same issues as commercial banks if not effectively regulated. In both sectors, size matters!

4.1.4 Summary: Affordability

The investment requirements and costs of delivering services, using conventional means (especially in respect of branches) are too high for traditional banks. This bricks-and-mortar operating model is expensive to construct and operate. In contrast, the use of third-party agents leverages existing infrastructure, thus having lower initiation costs and presenting commercial benefits for retailers – firstly, by attracting consumer traffic to the stores, and secondly, by reducing cash management needs through over-the-till cash withdrawals. These differences reflect in the costs associated with either channel.

Unregulated industry negotiations favour the big players, who are likely to have a preference for the status quo. Effective regulation is required in order to level the playing field. Non-bank institutions, as observed with MNOs both in Kenya and South Africa, are prone to the same abuses of market power.

4.2 RESEARCH GOAL 2: UBIQUITY

CPMI-World Bank Group (2016) stated:

> *The success of retail payment services depends critically on the availability, quality and reliability of customer service and access points. Historically, one of the greatest barriers to transaction accounts and other financial services has been the lack of physical proximity of the respective service providers and/or the access points/channels they are offering. Customer payment behaviour is especially sensitive to the density of access points in close proximity to their home or workplace. Limited access to physical access points may reduce the probability that a transaction account or a payment instrument are adopted, and, even if they are adopted, it may reduce the effective use of available payment instruments. Innovative payment services and business models offer the promise to bridge the physical divide without necessarily expanding the branch network.*

In order to gain wide acceptance, electronic payments have to be integrated into to the daily lives of retail consumers (Abel et al., 2018; CPMI-World Bank Group, 2016; World Bank Group, 2018). For this reason, branch, ATM, and agent networks are important channels for consumers. This research study focused on electronic banking payments as a medium of transacting. However, given the cash-driven nature of emerging market economies, it is important to have convenient access to physical cash.

4.2.1 Expanding the distribution network for easier access

This section presents observations regarding two modes of transacting. Firstly, the traditional commercial banking distribution model involving branches and ATMs. Secondly, the unconventional use of third-party agents – which employ alternative channels.

Tables 4.3 and 4.4 demonstrate the scalability of third-party agents as a distribution model, relative to traditional distribution models. This is important because numerous authors have identified ubiquity as a key condition to the adoption and use of retail payment systems (Abel et al., 2018).

The distribution model that uses third-party agents relies on an existing network of retail stores. This makes the model easily scalable (Abel et al., 2018; Kessler et al., 2017b). The growth in distribution points related to the non-bank led Kenyan environment, as reflected in Table 4.3, is exponential, with a compound annual growth rate (CAGR) of 29.5% from 2009 to 2017.

Table 4.3: Kenya distribution points per capita

KEN: Distribution points per capita	2009			2017		
	ATM	Branch	Agent/ NBFI	ATM	Branch	Agent/ NBFI
Distribution points (units)	**1827**	**996**	**23012**	**2825**	**1518**	**182472**
Population (+16 years)	**22 758 292**			**29 588 119**		
Distribution points (per capita)	**8,0**	**4,4**	**101,1**	**9,5**	**5,1**	**616,7**

Compounded annual growth rate (CAGR)						
Distribution points (units)				*5,6%*	*5,4%*	*29,5%*
Distribution points (per capita)				*2,2%*	*2,0%*	*25,4%*

Source: Central Bank of Kenya, Kenyan National Bureau of Statistics.

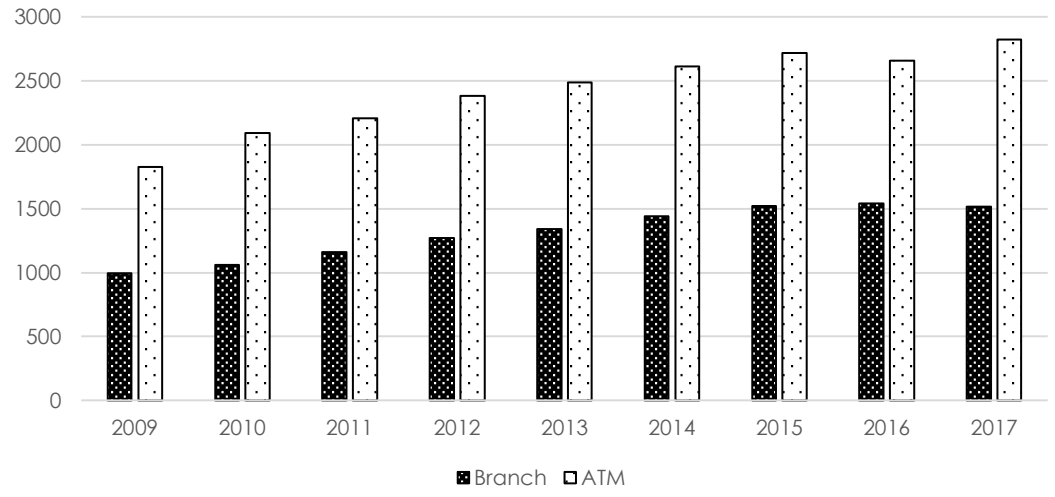


Figure 4.2: Growth of bank distribution channels in Kenya

Source: Central Bank of Kenya.

The rapid increase in branches and ATMs from 2009 to 2012 (Figure 4.2) was spurred by the response of commercial banks, following the introduction of M-Pesa in 2007. M-Pesa's distribution model relied on third-party agents, which grew rapidly – reaching 23,000 by 2009. The Kenyan banks, which had underserved the Kenyan banking market, with 996 branches and 1,827 ATMs in 2009, increased their branch and ATM networks aggressively during this period. The total branch and ATM networks grew to 1,518 and 2,825, respectively – much of the growth was attained from 2009 to 2014. Interestingly, there isn't a significant difference (only 0.2%) between branch and ATM growth over the period. This goes against expectations of a faster rollout of the considerably cheaper ATMs – compared to branches.

By 2010, the banks had acceded to the new competitive environment, opting for partnership agreements with MNOs. In the same year, the CBK published the agency banking guidelines, paving the way for the banks to offer agency banking services. The rate of growth in non-traditional distribution points further increased. In 2017, the unconventional non-traditional distribution points comprised 98% of the aggregate network, with access improved to 631 distribution points per 100 000 people. This level

of growth would not be attainable using conventional banking infrastructure only. FSD Kenya (2016) found that nearly 90% of Kenyans can access financial service outlets for less than KES50 (c. 45 US cents).

Table 4.4: South Africa distribution points per capita

RSA: Distribution points per capita						
	2009			**2018**		
	ATM	**Branch**	**Agent/ NBFI**	**ATM**	**Branch**	**Agent/ NBFI**
Distribution points (units)	**21 020**	**3 086**	**1 439**	**24 902**	**3 358**	**5 201**
Population (+16 years)	**35 350 859**			**40 893 177**		
Distribution points (per capita)	**59,5**	**8,7**	**4,1**	**60,9**	**8,2**	**12,7**
Compounded annual growth rate (CAGR)						
Distribution points (units)				*1,9%*	*0,9%*	*15,3%*
Distribution points (per capita)				*0,3%*	*-0,7%*	*13,5%*

Source: Company data, Statistics South Africa.

In contrast, the growth in distribution points, as reflected in Table 4.4, related to the bank-led South African environment, is marginal with a CAGR of less than 2%. The branch distribution model is not rapidly scalable due to the significant initial investment required (MarketLine, 2015; AfDB, 2012).

Notably, the growth in the branch network was driven by the growth of Capitec Bank, which entered the market in 2001 – a relatively new player by market standards. Cumulatively over the period, the “big-four banks” (the banks included in this study’s analysis, excluding Capitec) reduced their network by 85 branches. Meanwhile, over the same period, Capitec added 575 branches (Figure 4.3).

In contrast to Kenya, the use of third-party agents has not grown significantly in South Africa. The traditional branches and ATMs dominate the total population of distribution points, comprising 84% of the total and offering only a slight improvement in access to 82 distribution points per 100,000 people – from 72 in 2009.

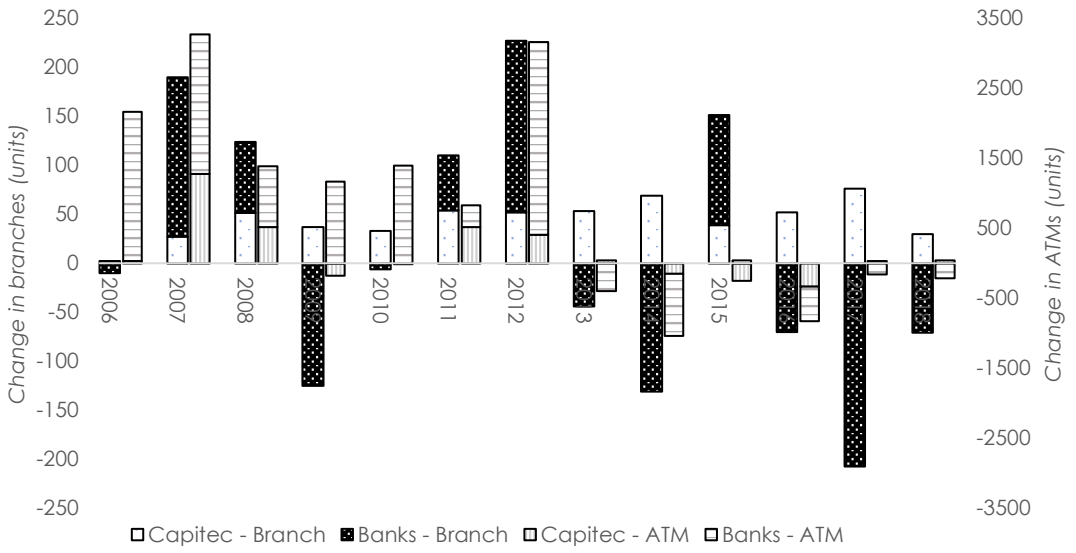


Figure 4.3: Year-on-year change in bank distribution points in South Africa
Source: Company data.

4.2.2 Impact of education on channel preference

Research suggests that low income consumers prefer in-person services over the use of technology (Dupas et al., 2018; Kessler et al., 2017a). Meanwhile, branches represent significant upfront investment and may not be commercially viable in certain areas (MarketLine, 2015; AfDB, 2012).

The distrust of alternative channels creates a dilemma for banks as the most price sensitive consumers prefer the most expensive service channel. Banks have responded to this situation by using pricing to discourage branch usage and direct customers to alternative channels – specifically ATMs (SRI, 2017; World Bank Group, 2018).

On the other hand, there are natural synergies between non-bank capabilities and the needs of low-income consumers. Non-banks can offer low-income consumers in-person services at a relatively low cost due to a desire for consumer traffic and the need to remove cash from trading premises (Cenfri, 2013). The formation of partnerships with network agents is a cost-effective solution that meets the consumer's needs and expands coverage with limited additional investment.

4.2.3 Summary: Ubiquity

The roll out of branches is expensive and not scalable. The closure of bank branches by commercial banks over the years is testament to this. However, low-income consumers prefer over-the-counter services. This creates a mismatch between the needs of consumers and the services that can be affordably provided by the banks. The use of third-party agents provides a viable solution in that they are low-cost and address the need for in-person assistance. In addition, the model is very scalable, putting financial services at consumers' doorstep.

4.3 RESEARCH GOAL 3: OPERATING ENVIRONMENT

4.3.1 Interoperability and speed of execution

Venkatesh et al. (2003) found facilitating conditions to be non-significant when both performance expectancy and effort expectancy had been considered. These results may help to highlight differences between the South African and Kenyan operating environments. Notwithstanding the favourable policy environment (i.e. facilitating conditions), there are specific issues that impact performance and effort expectancy which supported M-Pesa's payments value proposition – such that the presence of these variables may have led to the company's success in spite of policy choices. Countries looking to replicate Kenya's success have to carefully consider their own unique circumstances.

Safaricom's oligopolistic position within the Kenyan environment allowed M-Pesa to attain ubiquity without relying on market infrastructure (MarketLine, 2015; Iraki, 2016). Safaricom had a subscriber market share of 79%, when M-Pesa was launched in 2009 (Camner et al., 2009). This is not the case in many jurisdictions and may not be possible in environments that have competitive markets, without the dominance of any single counterparty. In such cases, active policy interventions may be necessary to encourage interoperability of infrastructure in order to offer consumers an ubiquitous service that meets their needs (MarketLine, 2015). Interoperability refers to the ability of financial services customers to use infrastructure provided by other financial institutions – other than the issuing bank (i.e. the customer's bank). Interoperability, in the payments environment, is achieved through payments switching through switching platforms such as Kenswitch, Bankserv and VISA. Regulation may be necessary in

order to provide consumers with easy access to limited, and often expensive, infrastructure.

Secondly, M-Pesa's status as a closed-loop system (i.e. "M-Pesa to M-Pesa" transfers of e-money, whereas cash could be drawn via SMS on other networks) meant that transactions could be settled in real-time, without the need for a centralised clearing authority or system (Lai, 2017; MarketLine, 2015). In a more competitive market, a large investment into settlement infrastructure would be needed in order offer consumers real-time clearing, often with significant cost implications.

The findings of Venkatesh et al. (2003) that facilitating conditions become non-significant when performance expectancy and effort expectancy are significant underscore the importance of policy decisions in payments adoption, particularly in unconducive environments. It can be argued that M-Pesa became successful in spite of regulation. Beyond granting the permission to operate, the regulator did very little to facilitate M-Pesa's success.

In contrast, the SARB would have to actively intervene to ensure the success of non-bank financial institutions based on available evidence. For instance, although the commercial banks' payment infrastructure if fully interoperable, there is limited access for non-bank players (Competition Commission (RSA), 2008; FinMark Trust, 2017; National Treasury (RSA), 2020). Similarly, significant investment has been made into RTC systems but there has been slow uptake, particularly by the larger banks, thus limiting the utility of the system (Ehrlich & Elliott, 2019; BankservAfrica & PASA, 2017). Once the major banks participated in the RTC system, costs were prohibitive for most consumers – further undermining the possibility of a more inclusive payments system (Ehrlich & Elliott, 2019; BankservAfrica & PASA, 2017; World Bank Group, 2018).

In the beginning, M-Pesa was launched as an *instant* money transfer service. The rapid growth of M-Pesa put commercial banks under pressure to improve their product offering. In response to stiff competition from the money transfer service, commercial banks fast-tracked initiatives aimed at improving the speed of cheque processing by establishing a centralised database. At that stage, cheque processing took a minimum of three days. In addition to the automated real time cheque processing, the Kenya Bankers Association, the umbrella body for regulated banks and the entity responsible

for the Clearing House, sought to move the processing of high value transactions to the real time gross settlement system, in order to improve the speed and efficiency of the Clearing House.

In contrast, South Africa has a well-developed commercial banking infrastructure. In 2006, South Africa was the first country in the world to implement an interbank RTC payment system (BankservAfrica & PASA, 2017). The founding members were ABSA and FNB. However, the system has not attained widespread usage, comprising only 1% of electronic payments in 2018 (BankservAfrica & PASA, 2017). The reasons identified for the slow traction of RTC include slow uptake by the big commercial banks, high transaction charges and poor marketing (no uniform branding and lack of advertising by participating banks).

Table 4.5: Real-time clearing costs and adoption

RTC adoption	Adoption date	Cost (2018)
ABSA	2006	R60.53
CAPITEC	2007*	R10.00
FNB	2006	R45.00
STANDARD BANK	2009	R50.00
NEDBANK	2008	R40.00

**receiving only participant/ Source: PASA, Bank pricing data*

The table above shows the cost and adoption dates of the RTC system in South Africa. Capitec, despite being the smallest bank by assets at the time, was one of the early adopters of the RTC system. Capitec also charges the lowest fee of all the banks, despite processing lower transaction volumes than the big banks. Ehrlich and Elliott (2019) cited Capitec as follows, “it is essential for us (i.e. Capitec) that the SARB sets the rates for RTC interchange, and all future payment innovations”. Bilateral negotiations are not easy for a small bank as the big banks have a volume incentive to maintain high prices and can use the bilaterals as a way of keeping small banks ‘out’.

In Kenya, the price of immediate payments is capped at KES500, via the Kenyan Bankers Association. Six out of the seven banks consider charge the maximum price, whereas one charges KES450. This charge, as is the case in South Africa, is significantly more than the cost of channels.

4.3.2 Summary: Operating environment

The success of Safaricom may not be replicable in every country. The company's unique circumstances – particularly, its dominance of the Kenyan market – worked in its favour. In other markets a supportive operating environment is important in order for payment innovations to prosper. Interoperability is necessary in order to ensure consumer convenience. Firstly, having wider access to all available market infrastructure, and secondly, having the ability to transact with consumers across service providers. Lastly, RTC improves speed of execution and promotes adoption of innovations for daily transactions. Regulation and market cooperation are crucial elements for both objectives.

4.4 RESEARCH GOAL 4: USAGE

4.4.1 The importance of usage

Dupas et al. (2018) tested the impact of expanding access to basic bank accounts in three emerging market economies, Uganda, Malawi, and Chile. The authors found that policies that merely focus on expanding access to basic accounts are unlikely to have a significant effect on the welfare of the average consumer. The use of access as a measure of financial inclusion blinds policymakers to the unmet needs of consumers.

Kessler et al. (2017a) argued that adoption without usage is of limited benefit. This can lead to negative results for banks and consumers alike. The research found that "South Africa's relatively high adoption of transaction accounts masks reality, the country remains a cash-oriented society". Only 24% of customers were found to make more than three monthly transactions of any kind, whilst many accountholders were found to withdraw their entire wages or welfare payments as soon as they receive them.

Table 4.6: Usage of accounts in Kenya and South Africa

Series Name	2014 [YR2014]	2017 [YR2017]	2014 [YR2014]	2017 [YR2017]
Usage				
Digital payments senders in < 1year (% age 15+)	66	76	53	43
Digital payments senders and recipients in < 1year (% age 15+)	69	79	59	60
Dormant Accounts				

No deposit & withdrawal from a bank account in < 1year (% age 15+)	10	9	7	13
No deposit & withdrawal from an account (incl. mobile money) in < 1 year (% age 15+)	5	4	13	12
No deposit & withdrawal from an account (incl. mobile money) in < 1 year, poorest 40% by income (% age 15+)	5	6	15	14
No deposit & withdrawal from an account in < 1 year, richest 60% by income (% age 15+)	6	2	12	11

Source: Demirgüç-Kunt et al., 2018.

Table 4.6. above shows that the active usage of accounts is higher in Kenya than in South Africa. In South Africa, usage even reduced from 53% to 43% from 2014 to 2017 – whereas it improved in Kenya from 66% to 76% over the same period. Similarly, South Africans experienced double or more the level of dormancies compared to the Kenyans. This is particularly so when comparing accounts (i.e. all financial service providers) and it is most observable with the poorest 40% of the population. South Africa only fared better when comparing financial institution accounts (i.e. traditional banks and other formal institutions), where the level of dormancies was better in South Africa than in Kenya.

This is consistent with the findings of the FSD Kenya (2016) report which found that traditional banks experience much higher levels of closure or dormancy than other service providers. The main reason cited for stopping to use a bank account is loss of income (i.e. employment or other income-earning means). This demonstrates that for many consumers, banks are mainly used to receive payments – they are not deemed appropriate for the purpose of completing daily transactions. In contrast, many survey respondents (48% of mobile financial services customers) confirmed usage of their accounts at least on a weekly basis, compared to only 16% for banks.

A survey[3] of early M-PESA registered users found that 62% were in the highest wealth quintile. Later studies found that the share of unbanked users increased dramatically from 21% to 75% and the rural poor users also increased from 20% to 72%.

[3] Cited by Ravi and Tyler (2012) in the report: Savings for the poor in Kenya.

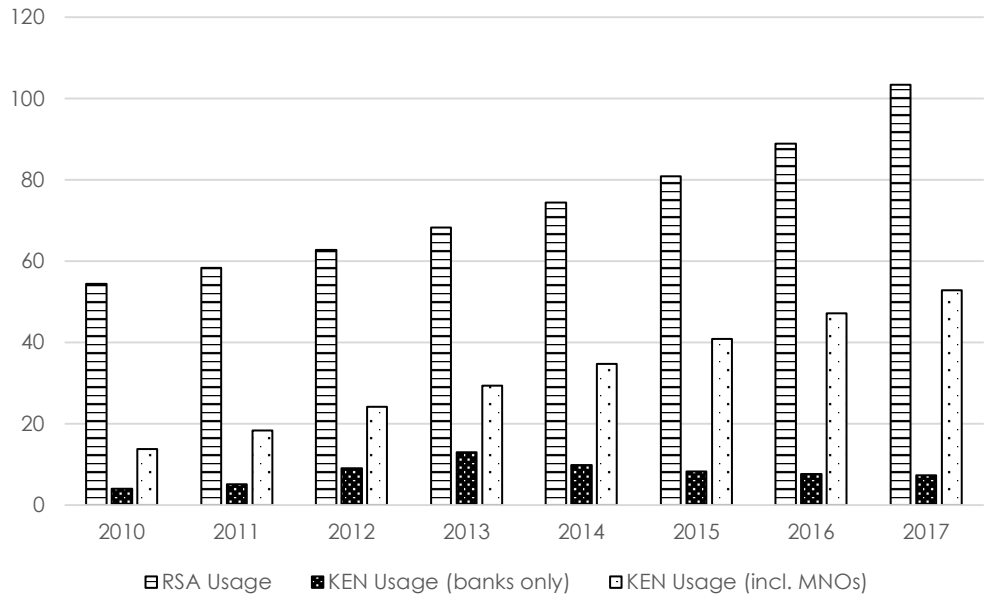


Figure 4.4: Volume of transactions per capita (i.e. usage)

Source: Central Bank of Kenya; Payments Association of South Africa.

Figure 4.4 above illustrates that growth in usage amongst Kenyans improved dramatically – increasing from 17 to 61 transactions per capita between 2007 and 2018. On the other hand, RSA usage which was already significantly higher than Kenya also showed improvements. The high level of access and implied usage of commercial banks has been offered as reason why non-bank institutions have failed in South Africa (Iraki, 2016). However, one should bear in mind the higher incomes of South Africans could drive higher usage, and yet, the high levels of inequality could mean there is concentration amongst high income groups in terms of usage. Although the data suggest that South African commercial banks are adequate for the purpose of financial inclusion, further research is required in order to understand usage levels at the bottom of the market. Other studies seem to suggest this market segment may be significantly underserved (Demirgüç-Kunt et al., 2018).

4.4.2 Summary: Usage of payments

Usage is the ultimate test whether financial services are providing benefits to consumers. The level of dormancies in South Africa suggests that there could be significant improvements in usage levels. This is most observable amongst poor consumers. The transaction data per capita, which is significantly higher in South Africa, suggests a higher stage of development and maturity of financial services.

However, the marginal contribution of non-bank financial institutions in Kenya – evident from the large increases in usage – underscores the importance of new innovations in expanding services to previously excluded consumer groups. Encouragingly, the research suggests that such adoption and usage is spread, in Kenya, across income groups – including low-income consumers.

CHAPTER 5. CONCLUSION

The research analysed three supply side determinants of the UTAUT model, comparing the likely impact on adoption between bank and non-bank financial institutions.

Firstly, the research indicates that non-bank financial institutions have lower construction and operating costs than commercial banks. This makes the cost of providing services through non-conventional channels significantly lower.

Secondly, the research indicates that because of the higher costs associated with commercial banks the model is difficult to scale up. In fact, banks have closed branches in the more mature South African market over the review period. On the other hand, third-party agent networks are low-cost and scalable. For low-income consumers, agents have the ability to provide in-person services at significantly lower costs than the banks are able to do.

Thirdly, the research indicates that commercial banks and non-banks are equally likely to abuse market power. Regulations need to be in place to encourage competition and promote innovation from new entrants. Moreover, the Kenyan model with M-Pesa may not be replicable or ideal in all markets. Its success was partly achieved due to the dominance of Safaricom in the Kenya telecoms market. Regulators have to create a conducive environment for innovation and competition. Interoperability and RTC are key requirements of wider acceptance and use of electronic payments.

Ultimately, financial services and supporting policies should be aimed towards improving the day-to-day lives of ordinary consumers. Regulators and industry participants should assess and aim to improve the usage of electronic payments, beyond mere access.

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APPENDIX A: UTAUT PREDECESSOR MODELS

Table A.1: Models and Theories of Individual Acceptance

	Core Constructs	Definitions
Theory of Reasoned Action (TRA)		
Drawn from social psychology, TRA is one of the most fundamental and influential theories of human behavior. It has been used to predict a wide range of behaviors (see Sheppard et al. 1988 for a review). Davis et al. (1989) applied TRA to individual acceptance of technology and found that the variance explained was largely consistent with studies that had employed TRA in the context of other behaviors.	Attitude Toward Behavior	"an individual's positive or negative feelings (evaluative affect) about performing the target behavior" (Fishbein & Ajzen, 1975, p. 216).
	Subjective Norm	"the person's perception that most people who are important to him think he should or should not perform the behavior in question" (Fishbein & Ajzen, 1975, p. 302).
Technology Acceptance Model (TAM)		
TAM is tailored to IS contexts and was designed to predict information technology acceptance and usage on the job. Unlike TRA, the final conceptualisation of TAM excludes the attitude construct in order to better explain intention parsimoniously. TAM2 extended TAM by including subjective norm as an additional predictor of intention in the case of mandatory settings (Venkatesh & Davis, 2000). TAM has been widely applied to a diverse set of technologies and users.	Perceived Usefulness	"the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320).
	Perceived Ease of Use	"the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 320).
	Subjective Norm	Adapted from TRA/TPB. Included in TAM2 only.
Motivational Model (MM)		
A significant body of research in psychology has sup- ported general motivation theory as an explanation for behavior. Several studies have examined motivational theory and adapted it for specific contexts. Vallerand (1997) presents an excellent review of the fundamental tenets of this theoretical base. Within the information systems domain, Davis et al. (1992) applied motivational theory to understand new technology adoption and use (see also Venkatesh & Speier, 1999).	Extrinsic Motivation	The perception that users will want to perform an activity "because it is perceived to be instrumental in achieving valued outcomes that are distinct from the activity itself, such as improved job performance, pay, or promotions" (Davis et al., 1992, p. 1112).
	Intrinsic Motivation	The perception that users will want to perform an activity "for no apparent reinforcement other than the process of performing the activity per se" (Davis et al., 1992, p. 1112).

Table A.1: Models and Theories of Individual Acceptance (Continued)

Theory of Planned Behavior (TPB)	Core Constructs	Definitions
TPB extended TRA by adding the construct of perceived behavioral control. In TPB, perceived behavioral control is theorized to be an additional determinant of intention and behavior. Ajzen (1991) presented a review of several studies that successfully used TPB to predict intention and behavior in a wide variety of settings. TPB has been successfully applied to the understanding of individual acceptance and usage of many different technologies (Harrison et al., 1997; Mathieson, 1991; Taylor & Todd, 1995b). A related model is the Decomposed Theory of Planned Behavior (DTPB). In terms of predicting intention, DTPB is identical to TPB. In contrast to TPB but similar to TAM, DTPB "decomposes" attitude, subjective norm, and perceived behavioral control into its the underlying belief structure within technology adoption contexts.	Attitude Toward Behavior	Adapted from TRA.
	Subjective Norm	Adapted from TRA.
	Perceived Behavioral Control	"the perceived ease or difficulty of performing the behavior" (Ajzen, 1991, p. 188). In the context of IS research, "perceptions of internal and external constraints on behavior" (Taylor & Todd, 1995b, p. 149).
Combined TAM and TPB (C-TAM-TPB)		
This model combines the predictors of TPB with perceived usefulness from TAM to provide a hybrid model (Taylor & Todd, 1995a).	Attitude Toward Behavior	Adapted from TRA/TPB.
	Subjective Norm	Adapted from TRA/TPB.
	Perceived Behavioral Control	Adapted from TRA/TPB.
	Perceived Usefulness	Adapted from TAM.

Table A.1: Models and Theories of Individual Acceptance (Continued)

Model of PC Utilization (MPCU)	Core Constructs	Definitions
Derived largely from Triandis' (1977) theory of human behavior, this model presents a competing perspective to that proposed by TRA and TPB. Thompson et al. (1991) adapted and refined Triandis' model for IS con- texts and used the model to predict PC utilization. However, the nature of the model makes it particularly suited to predict individual acceptance and use of a range of information technologies. Thompson et al. (1991) sought to predict usage behavior rather than intention; however, in keeping with the theory's roots, the current research will examine the effect of these determinants on intention. Also, such an examination is important to ensure a fair comparison of the different models.	Job-fit	"the extent to which an individual believes that using [a technology] can enhance the performance of his or her job" (Thompson et al., 1991, p. 129).
	Complexity	Based on Rogers and Shoemaker (1971), "the degree to which an innovation is perceived as relatively difficult to understand and use" (Thompson et al., 1991, p. 128).
	Long-term Consequences	"Outcomes that have a pay-off in the future" (Thompson et al., 1991, p. 129).
	Affect Towards Use	Based on Triandis, affect toward use is "feelings of joy, elation, or pleasure, or depression, disgust, displeasure, or hate associated by an individual with a particular act" (Thompson et al., 1991, p. 127).
	Social Factors	Derived from Triandis, social factors are "the individual's internalization of the reference group's subjective culture, and specific interpersonal agreements that the individual has made with others, in specific social situations" (Thompson et al., 1991, p. 126).
	Facilitating Conditions	Objective factors in the environment that observers agree make an act easy to accomplish. For example, returning items purchased online is facilitated when no fee is charged to return the item. In an IS context, "provision of support for users of PCs may be one type of facilitating condition that can influence system utilization" (Thompson et al., 1991, p. 129).

Table A.1: Models and Theories of Individual Acceptance (Continued)

Innovation Diffusion Theory (IDT)	Core Constructs	Definitions
Grounded in sociology, IDT (Rogers 1995) has been used since the 1960s to study a variety of innovations, ranging from agricultural tools to organizational innovation (Tornatzky & Klein 1982). Within information systems, Moore and Benbasat (1991) adapted the characteristics of innovations presented in Rogers and refined a set of constructs that could be used to study individual technology acceptance. Moore and Benbasat (1996) found support for the predictive validity of these innovation characteristics (see also Agarwal & Prasad 1997, 1998; Karahanna et al., 1999; Plouffe et al., 2001).	Relative Advantage	"the degree to which an innovation is perceived as being better than its precursor" (Moore & Benbasat 1991, p. 195).
	Ease of Use	"the degree to which an innovation is perceived as being difficult to use" (Moore & Benbasat 1991, p. 195).
	Image	"The degree to which use of an innovation is perceived to enhance one's image or status in one's social system" (Moore & Benbasat 1991, p. 195).
	Visibility	The degree to which one can see others using the system in the organization (adapted from Moore & Benbasat, 1991).
	Compatibility	"the degree to which an innovation is perceived as being consistent with the existing values, needs, and past experiences of potential adopters" (Moore & Benbasat, 1991, p. 195).
	Results Demonstrability	"the tangibility of the results of using the innovation, including their observability and communicability" (Moore & Benbasat, 1991, p. 203).
	Voluntariness of Use	"the degree to which use of the innovation is perceived as being voluntary, or of free will" (Moore & Benbasat, 1991, p. 195).

Table A.1: Models and Theories of Individual Acceptance (Continued)

Social Cognitive Theory (SCT)	Core Constructs	Definitions
One of the most powerful theories of human behavior is social cognitive theory (see Bandura, 1986). Compeau and Higgins (1995b) applied and extended SCT to the context of computer utilization (see also Compeau et al. 1999); while Compeau and Higgins (1995a) also employed SCT, it was to study performance and thus is outside the goal of the current research. Compeau and Higgins' (1995b) model studied computer use but the nature of the model and the underlying theory allow it to be extended to acceptance and use of information technology in general. The original model of Compeau and Higgins (1995b) used usage as a dependent variable but in keeping with the spirit of predicting individual acceptance, we will examine the predictive validity of the model in the context of intention and usage to allow a fair comparison of the models.	Outcome Expectations—Performance	The performance-related consequences of the behavior. Specifically, performance expectations deal with job-related outcomes (Compeau & Higgins 1995b).
	Outcome Expectations—Personal	The personal consequences of the behavior. Specifically, personal expectations deal with the individual esteem and sense of accomplishment (Compeau & Higgins 1995b).
	Self-efficacy	Judgment of one's ability to use a technology (e.g., computer) to accomplish a particular job or task.
	Affect	An individual's liking for a particular behavior (e.g., computer use).
	Anxiety	Evoking anxious or emotional reactions when it comes to performing a behavior (e.g., using a computer).