

SMEs in South Africa: The era of adopting mobile payment solutions

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Abstract. This research paper is the result of analysis into critical factors impacting the adoption and wide spread usage of mobile payments by South African small medium enterprises (SMEs). The research involved a qualitative research approach utilising interviews as a data collection method. The findings from the interviews with the SMEs identified critical factors and themes to be considered regarding mobile payment usage and adoption by SMEs. The findings revealed that the factors impacting mobile payment adoption by South African SMES were risk, convenience, ease of use, trust in service providers, system features, device features and issues, cost of fees, company image and credibility, blue tooth connection, customer service, integrated systems. The research gives key recommendations in the form of a framework for adoption of mobile payments by South African SMEs.

Keywords: Acceptance, adoption, framework, merchants, mobile payments, South African SMEs

1 Introduction

SMEs can be seen as the building blocks of a society and its economy due to the impact that they have on job and employment creation (Packham, Miller & Brooksbank, 2004; Habberton and Notcutt, 2013); Chiware and Dick, (2008), Steyn & Leonard, 2012; Steyn, 2018). They are critical in the building of an economy through economic and social development (Harris & Patten, 2014). Steyn and Leonard (2012) as well as Rhodes (2017), discuss how SMEs are important in many economies in the world and how the adoption of information communication and technology (ICT) is seen as a factor in the growth of SMEs.

The mobile device has become an extension of the human body. It is the gateway to our social lives through social network sites such as Facebook, Instagram and Twitter, our work lives through email, work applications, our personal lives (personal contacts, SMS, instant messaging services) and our financial lives (Davel, 2017; Gupta, 2011; Sagl & Resch, 2015, Steyn & Leonard, 2012). SME's acceptance of payment methods

is understudied yet, they are the providers of the goods and services that consumers will spend their money on.

South Africa is one of the most competitive economies in Sub Saharan Africa according to the World Economic Forum, Competitiveness 2019 Report (Schwab, 2019). South Africa is also one of the largest economies in Africa and is exposed to the international community through mineral export and oil import, technology, foreign direct investment and economic activity (The World Bank , 2019). Firms operating in such an environment need to be able to adapt dynamic capabilities to survive these environments (Teece, 2007)

From 2007 to 2015, mobile payment research has spread to Asian countries such as South Korea and Japan with limited research in developing countries such as Africa. The following mobile payments research has focused on merchants in a South African context: merchants in South Africa using Snapscan (Pidugu, 2015); merchants in greater Cape Town area using mobile payments (Kalan, 2016); mobile payments in South African townships (Mhlongo, 2016) and Verkijika (2020)'s study on South Africa consumers. Mallat, Rossi and Tuunainen (2004) 's research was focused on the European market while Ondrus and Gaur (2012) focused on mobile payments in developed countries, highlighting the failures and the role of banks in the ecosystem (Ondrus & Gaur, 2012). Gannamaneni, Ondrus and Lyytinen (2015) carried out a review of the efforts of mobile payment platforms between 2005-2015. This was based on the repeated failures of launches within the European markets, in countries such as Holland, Spain, Germany and Norway. Gannamaneni, et al., (2015) viewed the mobile payment systems as multi-sided platforms as they bring together more than one set of users: consumers and merchants. Ondrus and Gaur (2012) argue that mobile payment solutions are part of a platform with multiple parties that need to interact with each other before delivering value to the consumer and merchant. These parties include mobile network operators, financial institutions, content providers, credit card companies and technology firms (Mallat, et al., 2004).

This research proposes a conceptual dynamic framework for the mobile payment adoption by SMEs with a specific focus on the relationship to dynamic capabilities. SMEs. This study contributes by developing a framework for the adoption of mobile payments by SMEs in South Africa. This framework allows for better understanding of drivers and barriers to mobile payments in South Africa by SMEs within a developing country. The outcomes of this paper would enable mobile payment service providers to have a holistic view of what they need to do for mobile payment services to be more readily accepted by the public (merchants and consumers) in South Africa. Given the multi-sided nature of the market under research, there is a need to understand what value mobile payments provide to the different actors in the mobile payments' ecosystem, which is currently under-researched (Dahlberg, et al., 2015). van de Heijden (2002) argues that merchant and customer acceptance should be studied separately despite the high interdependence between the two.

The research question, this paper will address, is thus: What factors impact the SMEs adoption and usage of mobile payments in South Africa?

The rest of the paper is structured as follows. Section 2 details a literature review into SME merchants and mobile payments followed by the theoretical discussion which forms the basis of the framework. This is followed by a discussion on methodology as well as the data collection and analysis process which was followed. The results are presented along with a discussion and conclusion.

2 Literature Review

Small businesses are the key enabler to employment creation to counter the increasing unemployment rates of 27.2% (Packham, et al., 2004; Peris, Blinn, Nuttgens, Linderman & Kortzfleisch, 2013; Bureau for Economic Research, 2016; Adeniran & Johnston, 2016, Cant, Wiid & Hung, 2016; Gono, Harindranath & Ozcan, 2016; Mavimbela & Dube, 2016). SMEs contributed 36% to the GDP of South Africa in 2015 (GEM, 2016), however ranks very low in terms of ease of starting a business, in fact ranks 74/190 compared to other Africa countries such as Mauritius (49th), Rwanda (56th) and Morocco (68th) (Herrington, Kew, and Alesimo; 2016).

The importance of SMEs especially in the African context cannot be overstated (Jones, 2011). SMEs can be seen as the building blocks of a society and its economy due to the impact that it has in terms of job and employment creation (Habberton & Notcutt, 2014, Chiware & Dick, 2007; Cant, Wiid & Hung, 2016; Gono, Harindranath & Ozcan, 2016; Mavimbela & Dube, 2016). They are a critical factor in the building of an economy through economic and social development (Harris & Patten, 2014; GME, 2016). Rhodes (2017) acknowledges the importance of SMEs in many economies across the world and how the adoption of ICT is seen as a factor in the growth of SMEs.

According to Rhodes (2017) micro businesses employ one to nine people, small businesses employ ten to forty-nine employees and medium businesses employ fifty to five hundred employees, however this definition differs from country to country (Mastercard, 2014; National Small Business Act, 1996). The classification of SMEs can be further extended by market sector, location, innovation rate, asset value and organisation (Akhavan, Fathian and Hoorali, 2008). For the purposes of the research, the researcher applied the definition as per the National Small Business Act, 1996 as defined above.

At the end of 2015, there were more than 2.2 million small medium and micro enterprises (SMMEs) in South Africa with more than two thirds (1.49 million) of these SMMEs being informal (Bureau for Economic Research, 2016). A year later, there were 2.34 million SMMEs but this number decreased to 2.25 million by end of 2017 and was attributed to people being employed into formal sector jobs (Small Enterprise Development Agency, 2018). According to the Bureau for Economic Research, (2016) the more formal SMMEs are residing in Gauteng and the Western Cape, whereas the

informal SMMEs operates in more rural areas. A worrying trend is highlighted in the SEDA (2018) report indicating an increased number of survivalists SMMEs.

2.1 Mobile Payments

There is limited literature on mobile payment adoption in developing countries especially in Africa, this study aims to add to the body of knowledge. Gannamaneni, et al. (2015) call for more research into the field of mobile payment systems as there is still not enough reasoning or agreement as to why mobile payments have not been more widely accepted as initially expected. Dahlberg, Mallat, Ondrus and Zmijewska (2008) confirmed the lack of studies into merchant the mobile payments ecosystem. Dahlberg, Guo and Ondrus (2015)'s literature review found 188 papers in mobile payments that focused on the technological and consumer aspects between the period 2007 -2014, supporting Dahlberg, et al (2008)'s findings on the limited research into merchant's role in the ecosystem. The study conducted a systematic literature review and found there is limited knowledge and research to understand the merchants' role and adoption of mobile payments especially in the African context. This supports the findings by Guo and Bowman (2016) of the limited attention paid to the role of merchants in the mobile payment's ecosystem. The gap in knowledge is crucial because the growth of mobile payments usage in South Africa presents opportunities for vendors, merchants and consumers alike. Using previous research in mobile payments in Europe, Asia and South America this research aims to understand the reasons, the choice of payment technologies in the stated market and produce a dynamic conceptual framework that can lead to the increased understanding and adoption of mobile payment technologies by SMEs in South Africa. This study combines the TOE theory with Dynamic Capabilities to provide insights into business' capabilities to be considered for merchants in the context of mobile payment ecosystem.

A mobile payment is defined as the process in which the payer employs a mobile device to initiate an electronic procedure that initiates a financial transaction (Mallat & Tuunainen, 2005 and Pousttchi, 2004). Kreyer, Pousttchi and Turowski (2002) viewed mobile payments as a subset of mobile commerce whereas Carat (2002) define mobile payments as a subset of electronic commerce where at least one side is processed through a mobile device. Ondrus and Pigneur (2005) state that mobile payments are carried out wirelessly through a mobile device. Dahlberg, et al., (2007) expand on this stating that mobile payments are a form of payment for goods and services through a mobile device using wireless and communication technologies. Guo and Bouwan (2016b) update the definition to include the initiation, authorisation and confirmation of payment processes using wireless or other communication technologies. Based on the definitions, it can be summarised that a mobile payment is any form of payment that is initiated, processed and completed using a mobile device through the wireless application protocol, SMS service, mobile wallet or some form of application.

Payments are the critical process in the provision of good and services such as purchasing electricity, food, water, paying taxes, healthcare, salaries and education as all these services help an economy function. Ondrus & Pigneur (2005) noted that the digitisation of the payment process would become essential due to the success of e-commerce. This can be argued to be part of the evolution of the shopping process, with mobile payments being a part of the process (Ondrus & Pigneur, 2005). The merchant adoption of mobile payments was seen as a challenging process as merchants are the ones who have to pay the mobile payment provider for the service similar to credit card fees (van der Heijden, 2002).

In light of Teo, Fraunholz and Unnithan (2005)'s framework, Dahlberg, et al., (2007) refined the model and put together the framework in Figure 1. This was further refined by Guo and Bowman (2016) based on their studies of merchants operating in China. The framework indicated that consumers and merchants have influence on the mobile payment service provision which are all influenced by external factors such as culture, technology, legal, regulatory and commercial factors. This frameworks takes into account the factors that form the basis of the Technology-Organisational and Environmental (TOE) theory and hence from a research perspective, makes the TOE theory a suitable choice for this paper.

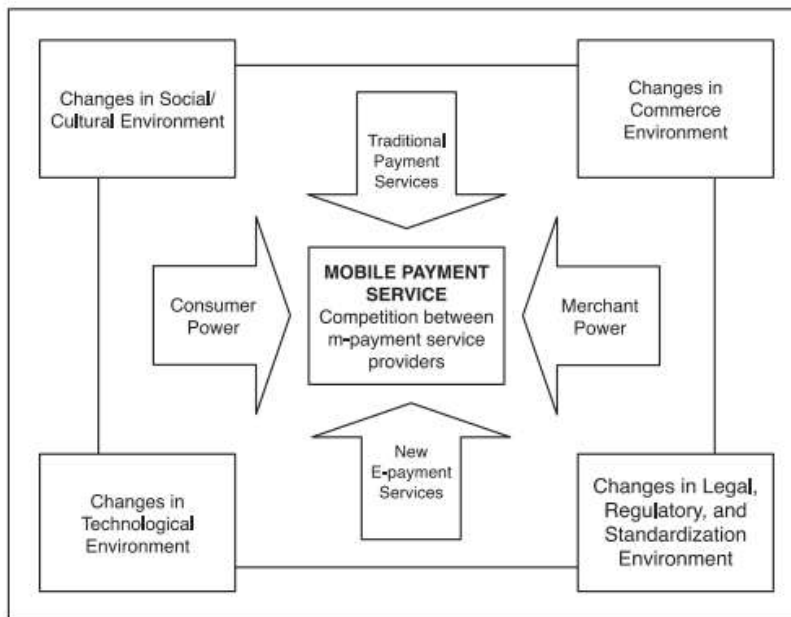


Figure 1: Framework: Mobile Payment Ecosystem [32] (Dahlberg et al, 2007)

The four corners in Figure 1 indicate the external factors that have an impact on the mobile payment ecosystem. Examples are:

- Changes in social/cultural environment: Covid-19 impact on social lives (United Nations, 2020)
- Changes in technological environment: The introduction of a smartphone by Vodacom that cost less than 1000 Rand (Reporter, 2018)
- Changes in legal, regulatory and standardisation environment: commencement of the POPI Act in South Africa in June 2020 (South African Government, 2020), Commission and Vodacom (South African service provider) settlement agreement on data prices (Competition Commission South Africa , 2020)
- Changes in commerce environment: Impact of the Steinhoff collapse (Mittner, 2017); Lockdown impact on South African economy (South African Reserve Bank, 2020)

All these external factors have an impact on economic and business within the mobile payment ecosystem. Despite the alternative payment forms in developed countries, mobile payment technologies and card payments, cash is still the pre-dominant form of payment worldwide with 85% of the value of transactions being in cash (Mastercard, 2017). In selected developed countries (Germany, France, USA, Austria, Canada and Netherlands), cash was still in dominant use and not just for small payments (Arango-Arango, Bouhdaoui, Bounie, Eschelbach, Hernandez, 2018). The European Central Bank noted that 75% of payments in the euro-zone are made in cash despite the digital age (Reuters, 2017). Arango-Arango et al. (2018) identified through their model that consumers will prefer to use cash for payment if they have enough cash on hand despite alternative payment method options. Hazra (2017) proposes that due to the anonymity that cash provides, it is the easiest form of payment for consumers to use as there are no pin numbers, account numbers to memorise or limits in most instances.

Mobile payments can be categorised into two sectors based on their transaction value (Pousttchi, 2004). Firstly Macro-payments: These are typical normal transactions e.g. purchasing plane tickets, bill payments and remittances and are defined as payments of a higher value 50 Rands and higher (Kreyer et al., 2002). Methods of payments are carried out through; short message service (SMS), Near Field Communications (NFC), Quick Response (QR) Codes, Mobile applications and web browser for mobile phones (Khiaonnarong, 2014). These methods allow for the transmission of financial messages.

Micro Payments: These are payment values up to 50 Rands (Kreyer, et al., 2002). Dahlberg, et al., (2015) and Ondrus & Pigneur (2004) define micro payments as peer-to-peer (P2P) and are small value transactions which are usually paid for by cash or debit card to the value of 205 Rands.

Ondrus (2003) defined possible handset designs; multi-application chip card, dual sim phone, external card reader, dual-slot phone and payment software built in the phone. The multi-application chip card has a SIM card and a Wireless Identification Module combined in a single card (Ondrus, 2003).

2.2 SME Mobile Payment Adoption Factors

Transactions Fee

The transaction fee is regarded as a major factor impacting adoption of mobile payments by merchants (van der Heijden, 2002; Teo, et al., 2005). Large retailers can afford the cost of investing in mobile payment technologies and rolling out devices at their own costs, however SMEs are already under significant pressure financially and hence this would be an extra overhead they cannot afford. van der Heijden (2002) details how most merchants are small and medium enterprises and would prefer a cheaper alternative such as cash payments.

Ease of Use

Positive adoption factors were found to increase the prospect of increased sales and reduction in transaction costs for payments (Mallat & Tuunainen, 2005). Ease of use on the merchant's side was identified as a cause for concern i.e. in the payment process when an employee did not understand how the mobile payment system worked and how to use it and resolve issues when faced with a customer who wants to pay using a mobile device (van der Heijden, 2002).

Perceived Trust and Security

Mallat & Tuunainen, (2005) cite a lack of trust by merchants in any of the multiple parties involved in the payment process being a significant barrier to adoption however Mallat & Tuunainen (2008) further state that few studies have examined security in mobile payments from the view of merchants. Trust and security are deemed inhibitors to mobile payments if not addressed (van der Heijden, 2002). A factor such as security was identified from the initial research and is still a pertinent factor for adoption and mass acceptance from both consumers and merchant perspective (Ondrus, 2003).

More trust is placed in larger telecommunication companies and financial institutions (Mallat & Tuunainen, 2005). This was raised as an inhibitor to adoption by Teo, et al., (2005) with more than 50% of the responses citing security as an issue. Reuver, Verschuur, Nikayin, Cerpa and Bouwman (2014) argue that the Trusted Service Manager (TSM) is critical for mass acceptance by both consumers and merchants as it provides the authentications and security that users wish for. Ondrus (2003) identifies authentication, availability, data integrity, confidentiality as some of the criteria relating to security that need to be addressed as part of ensuring that security and trust are embedded in the system and process.

Network externalities

Network externalities refers to the benefits that consumers will enjoy due to the presence of a network (Dahlberg & Mallat, 2002). Universal usage and wide scale acceptance were identified as important prerequisites for mobile payment penetration. Mallat & Tuunainen (2005) discuss critical mass as a part of network externalities. Favorable network effects can result in critical mass adoption which is a component for success in the mass adoption of mobile payments (Ondrus, et al., 2015). A large number of customers using or asking about a certain payment option such as mobile payments would convince merchants to adopt and offer mobile payments (Teo, et al., 2005). High usage rates in the long term are identified as consumer patterns that would likely convince merchants to adopt mobile payments (Mallat & Dahlberg, 2005). Another reason for not adopting, is the lack of merchant involvement in the development process. Merchants seek a process that is easy to use and most importantly a strong element of trust (Dahlberg & Anssi, 2007). Table 1 summarises the constructs that will be used in this research, based on the literature.

Table 1: Identified Constructs

Incompatibility with existing business	Mallat & Dahlberg (2005) and Mallat & Tuunainen (2005)
Trust and Security	Mallat & Dahlberg (2005), Mallat & Tuunainen (2005) and Pousttchi, (2004); Pidugu, (2015); Mhlongo (2016)
Perceived lack of standardisation	van der Heijden (2002), Mallat & Tuunainen, (2005), Ondrus & Pigneur (2006) and Ondrus & Pigneur, (2005); Pidugu, (2015)
Cost (relative to substitutes)	van der Heijden (2002), Mallat & Dahlberg (2005), Mallat & Tuunainen (2005), Teo, et al., (2005), Pousttchi (2004) and Ondrus & Pigneur (2006); Abebe and Lessa (2020); Mhlongo (2016)
Ease of Use (relative to substitutes)	van der Heijden (2002) and Ondrus & Pigneur (2006); Pidugu, (2015); Kalan (2016); Abebe and Lessa (2020)
Perceived Risk	van der Heijden (2002)
Network effects	Pousttchi (2004); Pidugu, (2015)
Network externalities	Van Hovve (2001); Pidugu, (2015)
Business model	Mallat & Dahlberg (2005), Mallat & Tuunainen (2005), Ondrus & Pigneur (2005); Pidugu, (2015)
Technology compatibility	Mallat & Dahlberg (2005), Mallat & Tuunainen (2005) and Ondrus & Pigneur (2005); Pidugu, (2015)

A literature review and assessment of the T-O-E provided a basis for categorizing these constructs within the dynamic framework to provide a theoretical basis paper, see Figure 2.

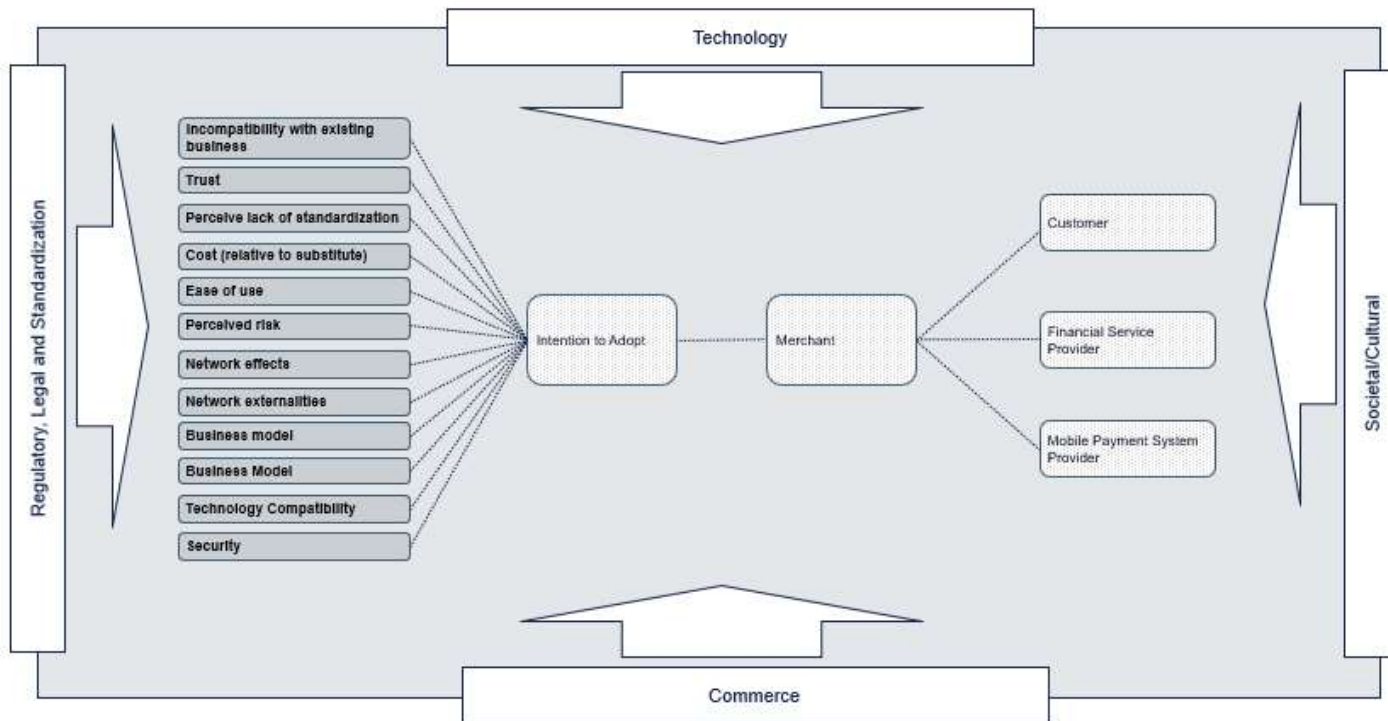


Fig. 2. SME Mobile Payment Conceptual Framework

3 Theoretical Foundation and Research Framework

More than 91% of the research conducted in the mobile commerce field between 2008 and 2016, was carried out through quantitative methods indicative of a strong positivist paradigm by the researchers (Chhonker, et al., 2017). Despite calls by Dahlberg, et al., (2015) in the field to diversify the research methods and to enrich the data of mobile based research, the quantitative trend still continues. The following sections and sub sections will the two theories applied in this study. Given the setting of the SME Mobile Payment Conceptual Framework (SME MPCF) and exposure to various external and internal forces, the TOE theory provides a complimentary lens into the ecosystem for this research. Given the early stages of mobile payments and maturing business models and two-sided market views, the Dynamic capabilities framework enables the deeper understanding of the business models that are in effect in the mobile payments ecosystem.

Teece (2007) indicates that a framework is derived from reality and attempts to classify constructs and depict their relationships in a meaningful way. The framework that has been proposed here is underpinned by the theoretical lens of the T-O-E. A conceptual framework is a useful way for a researcher to express ideas, concepts and to represent their findings (Smyth, 2004). T-O-E considers environmental, internal and external aspects. Another reason is that Piaralal et al, (2015) argues that there are a limited number of firm level theories that can be used to study the adoption of IT in firms. Use. Alharbi, Atkins and Stanier; (2016) states that a combination of T-O-E and Diffusion of Innovation (DOI) has been shown to be most effective given the consistency and applicability of DOI. Awa, Ukoha and Igwe (2017) further state that due to the highly differentiated nature of technological innovations, no one theory or model can be all encompassing to explain the adoption of innovations by firms. Maduku, Mpingajira and Duh (2016) add that T-O-E is more ideally suited for this study than the DOI as it takes into account the environment context.

Due to the nature of the innovation of mobile payments focusing on business level research, the T-O-E is the most appropriate framework to use (Alharbi et al (2016). Environmental and organisational factors have been shown to influence e-commerce adoption by SMEs in Tanzania (Kabanda & Brown, 2017). This theory examines how firms adopt technology innovation through the different contexts of environmental, technologically and organisationally (Alharbi et al, 2016 and Piaralal, Nair, Yahya and Karim, 2015). The T-O-E framework has been used extensively in explaining organisational adoption of information systems and new technologies such as cloud computing adoption by Saudi SMEs (Alharbi, et al., 2016), adoption of green practices in SMEs (Piaralal, et al., 2015), e-Government in Jordanian companies (Thi, Lim and Al-Zoubi, 2014). The T-O-E framework has been used in different research strategy approaches with both qualitative and quantitative data collection methods (Hoti, 2015).

4 Methodology

4.1 Research Design

To gain a deeper understanding of the phenomena at the heart of the study, this research used semi-structured interviews as the main data collection method due to the ability to enable an in-depth analysis of the participant's views, thoughts, actions and behaviors. The questions were based on the constructs within the context of the TOE framework. In the research design process, the interview questions were designed in accordance with the objectives of the research and based on literature. The questions were divided into sections, starting with a brief overview of the SME followed by questions relating to technological, organisational and environmental aspects.

The interviews were conducted with 18 SMEs, predominantly the owners of the SME businesses that operated in different locations around South Africa. This was to ensure a broad perspective given the different conditions faced by SMEs in different parts of South Africa. In person interviews were conducted with the sessions lasting between 20 minutes to 60 minutes each.

The SME interviewees were selected based on having already engaged in e-commerce, m-commerce activities and who possessed at the least a Point-of-Sale device. Contact was made with SMEs or SME owners in the urban and semi-urban areas of the nine provinces of South Africa (Gauteng, North West, Northern Cape, Western Cape, Eastern Cape, Free State, KwaZulu Natal, Mpumalanga and Limpopo). The list and details of the interviewees are detailed in Table 2.

The list of SMEs was obtained from each province's business directory sites as well as by referencing mobile payment provider websites. The interviews were conducted from May 2019-July 2019. In the interview process, the interviews were recorded on a digital device and the researcher made notes to supplement the audio recordings. Upon completion of the interviews, these were transcribed and each response to the questions was analyzed; discussed in the section below.

4.2 Data Analysis

Using the TOE Framework, the researcher analyzed and coded the interviews as well as the notes taken during the interviews. The In-vivo coding process was carried out on the transcripts before axial coding was carried out. The axial coding process entailed looking for similarities among codes, repetitions, relationships, causalities and looking for different perspective to view the codes and to ask if some were really codes. A refinement in the process occurred as some of the codes were too narrow i.e. only one instance or too broad i.e. on further examination there were two or three codes. The axial coding refined the codes to just under 150 unique codes. Table 2 is an overview of all the SMEs interviewed.

Table 2: SMEs Industry and Years in Operation

SME	Positions	Number of Employees	Payment Technology	Industry and business focus	Number of Years in Operation
SME A	Owner	None	Yoco and Snapscan	Healthcare – Online Health store	5 Years
SME B	Owner	None	Yoco and Cash	Publishing – Comic books and novels	3 Years
SME C	Owner	None	EFT and Cash	Retail – Natural hair products	3 Years
SME D	Owner	1	Nedbank Pocket POS	Retail – Shoe accessories	2 Years
SME E	Owner	9	Bank POS and Cash	Hospitality – Fast food outlet	2.5 Years
SME F	Owner	9	Zapper and Bank POS	Hospitality – Restaurant	2 Years
SME G	Owner	10	Yoco, iKhokha and Cash	Hospitality – Restaurant and catering	5 Years
SME H	Owner	1	Yoco, Snapscan, Bank POS and Absa Pebble	Retail – Clothing	12 Years
SME I	Owner	100	Yoco, Snapscan, Bank POS and Zapper	Hospitality – Restaurants	6 Years

SME J	Owner	None	Yoco and Snapscan	Retail – Women’s clothing	2 Years
SME K	Manager	20	Yoco and Snapscan	Retail – Women’s clothing	7 Years
SME L	Owner	2	Bank POS and Nedbank Pocket POS	Retail – Women’s clothing	2 Years
SME M	Owner	2	iKhokha, Snapscan and Bank POS	Education – 2 nd hand books store	7 Years
SME N	Owner	6	Yoco, Snapscan, Zapper and Bank POS	Hospitality – Street food	6 Years
SME O	Owner	7	Yoco	Retail – Clothing	6 Years
SME P	Owner	1	Yoco and Cash	Education - Book store	2 Years
SME Q	Owner	6	Yoco	Hospitality – Restaurant	2 Years
SME R	Owner	None	Zipzap and EFT	Manufacturing – Handbags	2 Years

This research carried out the process at a code, category and theme level.

5 Results

Technology adoption decisions are impacted by technology, organization and environmental impacts.

System Features

System features play an important role in the themes described by the interviewees as they enable the business operations, payment processes as well as aspects such as customer experience. System features have a link to the customer experience and hence ease of use factor.

“Reporting is an issue as we only receive SMS notifications, so we go through those one by one” (SME D)

Some of the mobile payment systems facilitated their processes manually before the introduction of the mobile payment systems and hence the positive mentions as per below in terms of the system features.

“It allows us to track stock and orders” (SME K)

However, the evidence is not consistent as different SME merchants had alternative experience. This was not a consistent feature available on all systems and hence resulted in some manual processes in the stock taking process remaining. In the instance of the feedback shared by SME K, this was noted as they had two mobile payment solutions (Yoco and Snapscan) and hence the feel below feedback referred to Yoco.

“Yoco does not manage stock so right now we use excel spreadsheets” (SME K).

As a construct, system features had both positive and negative mentions and hence features as a construct in the updated model.

Trust in service providers

Trust is a strong factor in mobile payment acceptance literature and also featured strongly in the feedback from the interviewees, SME D stated:

“It is a bank approved product”

This is indicative of the strength of the company brand and the inherent trust based on the fact that the provider is a bank, an established financial entity. However, SME H said “The trust is inherent until there is an issue.”

This contrasts other feedback that indicated that the type of a service provider, a bank or an independent/private mobile payment system provider, played a role when looking at trust.

Device features / issues

Device issues had a very high frequency in the codes and categories during the analysis. Interviewees, who had mobile payment systems involving interaction between the mobile phone and the mobile payment device had this construct as a common code which emerged.

“It does go down, I had issues when it went down” SME G.

Instances of mobile payment applications crashing were noted strongly. Given that entrepreneurs exist within an eco-system, this feedback is shared by other entrepreneurs when inquiring about payment systems to use. As this extended to physical devices; it was noted that there was sometimes a syncing issue between the device and the mobile phone:

“Well it crashed the one time when I was at a pop-up market, it was not syncing” (SME)

In this particular instance, this resulted in the business owner cancelling that particular mobile device, deferring back to the traditional point of sale units from a bank. The device features and frequency of issues with the system is a real concern, however this can also be viewed as poor customer service from the mobile payment system provider as well.

Cost of fees

Cost emerged in the literature as an important construct which was confirmed during the interviews. In the analysis, cost of fees was noted as a code and as a category with the highest number of codes. The evidence shared by the interviewees ranged from positive to negative opinions based on mobile payment systems that was based on a need to reduce costs:

“The cost of using these devices is less than the cost of depositing cash” (SME F).

“The most important thing that I look at these mobile things is really the fees” (SME).

This is mirrored by similar feedback that was consistent throughout the interviews. One very passionate and incensed interviewee operating four restaurants stated:

“Yes, the ***** fees, the fees are too high, too high” (SME A).

The evidence suggest that costs is a serious consideration to take into account before making a decision on the type of payment system to use in the business. These costs are both the once off costs of the device and system as well as the monthly / transactional cost associated with using the system.

Simple to use / Difficult to understand

The evidence from the interviewees indicated that the simplicity to use the mobile payment devices was not as straight forward. The most dominant feedback was that the systems were a bit more complex to use and were not as intuitive or easily understood when in operation. One SME stated that the type of mobile payment system that they had taken up from a financial institution required that they use a certain version of

smartphone and this forced them to incur more costs by buying new smartphones for the business:

“So, it meant you had to have proper phones and everything, which is a challenge” (SME G).

“That was the most challenging part, trying to figure it out from the start, it was not straight forward” (SME D)

This indicated the lack of intuitiveness of the devices and processes once the mobile payment devices were in operation and hence posed a challenge to the SMEs.

Risks

Risk emerged as a consistent factor in the feedback from the interviewees, including things like data breaches, security, loss of cash and physical security. These factors had a positive impact on the decision to use mobile payment systems:

“It was to reduce cost and to give the customer the option of not carrying cash” (SME G).

It was also noted that the use of electronic devices came with a risk and hence this was viewed as a two-sided factor. There were positive reasons to consider in the use of mobile payment devices, such as mitigating risks including theft, physical harm in cases of robbery. The risks noted with the use of mobile payment devices was encapsulated with: “There is always a risk when you give credit card information to a third party like Zapper” (SME D).

Statements such as this also speaks to an earlier mentioned construct of trust. There seems to be evidence that constructs such as risk and trust go hand in hand in influencing the decision to acquire a mobile payment solution.

Company image and credibility

The use of electronic payment systems seems to be an indicator of a better company image and some level of credibility compared to the use of cash in the business transactions. SME P stated that the use of mobile payment technologies does improve the image that their business portrays:

“Yes, it does improve my company image, that is the first thing people ask, when they walk into the shop.”

This is supported by SME Q, an owner of an African cuisine restaurant stating that, “Yes. A lot of African Restaurants operate on a cash only basis. It makes us look more professional that people can pay via their cards using Yoco.”

The evidence was not as consistent, it indicated that some SME merchants were thinking of customer’s perceptions based on the technology in store.

Bluetooth connection

A large majority of the more well-known mobile payment systems that involved the pairing of a smartphone to an additional payment device involved the use of Bluetooth.

The Bluetooth connection factor raised issues and resulted in instances where there was failed connections at vital points at markets. This resulted in lost sales, as customers would not wait for the devices to pair up. This was as sticky issue in a process that already involves friction in the payment instance at check-out / sale process:

“I wish I didn’t have to pair it with my phone to work” (SME D)

There is evidence of issues linked to the bluetooth connection factor leading to misunderstandings in the process in instances where the business owners thought the device had failed in the transaction process:

“There is always like a delay between the phone and the machine, so you don’t ehm, you don’t take that into consideration, so you think the transaction has failed, in the meantime it hasn’t, it is just a delay” (SME N).

Business processes / Customer service / Payment options strategy

This is a new construct and speaks to the impact that the mobile payment system has on the business process and customer service. The evidence shows linkages in the three constructs, payment strategy, business processes and customer service. SME D, shared that: “It hasn't improved business processes (laughs)”.

This indicates that the interviewee had expectations of an improvement in business processes that could have resulted in quicker operations times, improved customer service, improved sales and this was not materialising. SME I saw mobile payments as part of their strategy as the economy toughened and they were affected by electricity shortages.

“I think it became part of our adaptive strategy, so when we first opened, no one thought we would have rolling black outs so often.”

The emergence of this construct is partly based on the environmental factors that have impacted businesses in South Africa such as increased power outages. To increase or continue offering the same customer service, there is evidence of the use of payment solutions that can be used during power outages.

Integrated systems

The implementation of another system had cost and complexity implications with the addition of another device and system impacting the existing business processes. This resulted in additional processes or amendments to an existing process:

“Our systems are not merged, they are separate” (SME A).

The interviewee noted that there was a need to integrate the systems so that reporting could be carried out from one place.

“If there was some-way to integrate everything holistically so that you get all of your statements through one portal per se” (SME A).

SME D noted that she had to use a book and write down her sales while scanning the phone for the SMS’s that confirmed payment because the system had no reporting function. This summarised that, integrated system was a note of concern in the payment process.

Convenience

Given that most of the mobile payment systems involve the use of an additional device, this construct was driven by the need to ensure that customers did not suffer in the process of making a payment. SME L shared that:

“So, it was more the convenience that you were offering to your customer that as a form of payment”.

SME N stated that “I think that from a convenience view you are able to accept credit cards, debit cards for any event, any market, any time so that’s it.”

So, the convenience construct is also a two-sided factor as it impacts both the customer and the SME merchant in the process.

6 Discussion and Conclusion

This section discusses the research impacting mobile payment adoption by SMEs in South Africa. The insights based on the analysis indicate that there are more factors to take into account than the literature suggested. The identified constructs within the framework are grouped into the following themes; business decision making; customer access and marketability; the impact of payment systems and payment process on the business, infrastructure setup, support and connectivity; operating a business and its processes. The identified constructs all play important roles in the adoption decision by merchants however the themes that they are grouped into also play an important role in influencing the decision to adopt mobile payments. The TOE describes an all-encompassing view of both internal and external lenses.

The study has shown the need for an all-encompassing understanding of technological, organisational and environmental factors in the SMEs usage of payment technology. Factors such as Cost, Ease of use and risk have been highlighted consistently in findings from consumer research as significant factors in adoption and this is mirrored by SMEs who offer the payment options as a factor that impacts the adoption and use of the technologies. The updated constructs from the study are detailed on the right-hand side. There are common constructs such as trust, costs, ease of use and risk which is supported by the literature reviews. The new factors identified, such as customer service, company image and credibility and convenience show that non technology factors also play a significant role in influencing the adoption of mobile payments by SMEs.

As per the code, category and theme analysis, these factors had a more significant impact on an SME's use, decision making process than the initial set of constructs in the framework.

The research adds value to the academic body of knowledge through a comprehensive review of existing literature on mobile payments and SMEs in South Africa. The findings have revealed that for mobile payment adoption to take effect and be impactful in SMEs in South Africa, a multi-disciplinary approach must be considered. The research extends the current understanding of mobile payments especially in developing countries, specifically an African country. It highlights critical themes that must be taken into account by financial institutions, information technology ministries and private firms offering mobile payments technologies.

There is limited literature that seeks to establish a framework depicting adoption of mobile payments by SMEs. By answering the research calls to provide more research into the SMEs role in mobile payments, an extension of knowledge about mobile payments has been bridged. The focus on South Africa adds further value to the research and body of knowledge of ICT adoption by SMEs in Africa. This is an area that has received less attention compared to developed countries as shown in the literature review. The research was not exhaustive and there is a need to validate and authenticate the results by applying the study to a wider range of SMEs across South Africa. This can be complemented by a multi-disciplinary data collection approach. A comparative study of other African countries that have similar economic, socio-economic, political climates to ascertain if there would be noticeable differences would be helpful in establishing and broadening the legitimacy of the study and results.

The research has contributed to the body of knowledge by identifying key factors that significantly impact the adoption and use of mobile payment technologies by SMEs in South Africa. The study highlighted this through the use of the TOE model as a baseline. The study shows that technology plays a key role in the adoption but organisational and environmental factors play a pivotal role in the decision process and hence use of mobile payment technologies by SMEs in South Africa. By incorporating this framework, SMEs in South Africa, and hopefully other developing countries, will be able to adopt and gain a competitive advantage through the successful implementation of mobile payment devices.

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