“Mobile banking in South Africa: a systematic review of the literature”

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Mobile banking in South Africa: a systematic review of the literature

Abstract

Mobile banking in South Africa recently has undergone rapid growth, and research on it is on the increase. This paper seeks to improve authors' understanding of the current state of knowledge of mobile banking in South Africa by providing a systematic review of the existing literature on the phenomenon. The literature review shows that research to date has centred on small academic models with a high level of practitioner involvement, consequently, narrowing research issues of greater concern. Thus, issues of assessing mobile banking needs, factors imparting continuance usage, and the measurement of impact have been comparatively neglected. A future direction for research and practice within the mainstream of mobile banking and financial services is suggested to remedy this imbalance and to contribute to mobile banking applications in South Africa.

Keywords: mobile banking, technological devices, applications, small academic models.
JEL Classification: G21, G28.

Introduction

Business conducted via technology is rapidly growing and becoming highly competitive – and mobile banking is no exception. In a bid to optimize the benefits of technology in E-services, financial service providers must understand what motivates customers' intent and the continuous usage of E-commerce enabling technologies (Perrigot & Penard, 2012, p. 24). The trend of mobile banking (M-banking) has expanded rapidly, with global mobile phone penetration being more than the usage of personal computers (Zhou, 2011, p. 242). This has forced organizations worldwide to invest in the various mobile commerce technologies and applications. For instance, South African M-banking records have, since 2011, witnessed increases in the number of people using mobile devices to do their banking (Pretorius, 2013; Duncombe & Boateng, 2009, p. 1243).

According to Zhou (2011, p. 244), a number of factors have led to the adoption of M-banking. First and foremost, factors for initial acceptance of technology play a major role. However, for companies to survive, it is important to have both initial adoption and continued usage (Lin and Shih, 2008, p. 67). Hence, it is important to identify factors that contribute towards the repeated use of technology, as well as those that cause discontinuance (Lin & Shih, 2008, p. 68).

This revelation notwithstanding, there has never been a comprehensive study that integrates constructs like Perceived Trust (PT), Social Norms (SN) and Service Quality (SEQUAL) to determine mobile banking continuance intention in SA. The deployment of a user satisfaction (SAT) survey to investigate the proportion of 49 million phone subscribers who do mobile banking, to predict whether mobile banking usage will continue into the foreseeable future in South Africa, has not yielded adequate results (Shambare, 2011, p. 1).

An earlier study by Brown et al. (2003) demonstrated that mobile banking in South Africa was mainly transacted by people living in urban areas. Brown's study indicated that 147 out of 162 of the respondents in the study had never done mobile banking. This notwithstanding, 35% displayed willingness for future usage. Since then, a number of studies have been undertaken on mobile banking continance usage intention (see Table 1 below).

The question that this paper seeks to find answers to is how much do we know about mobile banking in South Africa?

The aim of this paper is to review empirical studies on mobile banking in South Africa, provide a better understanding of its current state, and identify gaps that will suggest directions for future research.

1. Literature review

This Section provides a model for identifying, critiquing and summarizing past studies related to MB behavior in South Africa.

1.1. Search parameters and web search. Relevant literature was accessed using the following search engines: IEEE, Science Direct, Emerald, SABINET, Google, Google Scholar, Bing, and Springer. Google and Bing provided XML interfaces for automatic querying, which prompted further investigations. While Web of Science, EBSCO, Emerald and Springer did not yield much

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data on mobile banking (MB) in South Africa, the other mentioned search engines proved very helpful and commendable.

In light of the above, we reviewed MB in South Africa using innovative technology devices such as smart phones, tablets, personal digital assistance (PDA), as smaller devices and laptops or tablets PCs as bigger devices, while excluding mobile vans, GPS systems and other heavy-duty devices capable of performing MB.

Table 1. Closely related study of mobile banking continuance (MB) Intention in South Africa

Authors	Theories	Respondents and countries	Actual outcomes
Brown et al. (2003)	IDT	162 respondents across South Africa	Relative advantage, TR, perceived risk and consumer banking needs are the main factors that encourage acceptance of MB
Brown & Molla (2005)	Comparative study	Extracted data from (Brown et al., 2003), who surveyed 162 people in a study of cell phone banking in South Africa	Cell phone banking is influenced by its trialability and compatibility
Borg & Persson (2010)	Diffusion framework	21 semi-structured interviews and a number of observations in South Africa	Main influencing factors are innovation features, social factors, customer perception and suitability of innovation to users' environment
Masinge (2010)	TAM 2	Physical hardcopy survey in townships around Gauteng	Customers in the BOP will consider adopting MB as long as it is perceived to be useful and easy to use. But the most critical factor for the customer, is cost and trust
Bankole & Cloete (2011)	UTAUT	Both a questionnaire and interview of 220 respondents from South Africa	Culture, awareness, convenience and literacy level imparted MB acceptance
Shambare (2011)	IDT	124 cell phone users from Gauteng, Mpumalanga and Limpopo in South Africa	Perception of risk and security concerns slow down adoption rate
Ismail & Masinge (2012)	TAM2	309 responses from Gauteng province in South Africa	The most critical element is cost, with trust negatively correlating to perceived risk, but enhancing loyalty
Maduku & Mpinganjira (2012)	TAM	394 responses from retail banking customers in Gauteng, South Africa	PU, PEOU, trust and subjective norms have a significant impact on cell phone banking, with trust being the most significant
Wentzel et al. (2013)	TAM	341 respondents through a house-to-house agent collector	Attitude followed by PEOU, while social factors and technology self-efficacy were the least significant factors in determining technology financial service adoption in South Africa

Source: PU = Perceived Usefulness, PEOU = Perceived Ease of Use, TAM = Technology Acceptance Model, IDT = Innovation Diffusion Theory, UTAUT = Unified Theory of Acceptance and Use of Technology.

1.2. Filtering process and methodology. Articles dealing with just internet banking without stressing the mobility of devices used to carry out banking were presumed to be using stationery personal computers (PCs) and were, therefore, omitted. However, papers that discussed the main issues such as banking through cell phones, laptops and other handheld devices, were set aside for further refinement. The researcher scanned through these articles to identify a more relevant reference list from some of them, and this helped with the collection of additional 13 papers (Hart, 1998; Park & Gretzel, 2007). After this selection process, 23 papers were found to be more appropriate for use.

Most articles used in this study were peer reviewed papers on mobile banking studies. Most of the studies investigated user acceptance of MB and not continuance intentions (CI). The searches on Bing, Science Direct, SABINET and IEEE were stricter than Google Scholar and aimed at articles more closely aligned to the subject of South African MB. This was to enable an in-depth review of the issue in South Africa. Of the articles collected from Google Scholar, 17 were dissertations/theses by South African scholars, 2 out of the 3 IEEE were articles on South Africa, all 3 articles from SABINET were on South Africa and only 1 article of the 11 Science Direct articles was on South Africa. The only article from Bing also surfaced in the Google Scholar publications, while 8 duplicates were recorded among the Google Scholar collections.

1.3. Evaluation and synthesis of search results. Cell phone banking has been available in South Africa since early 1998 (E-business handbook, 2003), and, since then, there has been an upward stage of the phenomenon. This could be partly due to innovative ideas like M-PESA and WIZZIT. WIZZIT is on record for its ground-breaking results among the poor using MB in South Africa (Duncombe & Boateng, 2009). Much higher penetration levels of cell phones in Africa compared to the internet (World Internet Statistics, 2010: Internet; ITU, 2009: Internet) helped to facilitate this. For instance, Pretorius (2013: Internet) reported that South African MB records have, since 2011, seen increases in the number of people using their MDs to do their banking. The continuance behavior for sustainability of this concept is, therefore, crucial in South Africa.

A systematic literature review of the theories on technology innovation and adoption was done, and synthesized and critically evaluated with a view to understanding MB behavioral intentions in South Africa.

1.4. Theory of perceived risk (TPR). This theory assumes that consumers suffer some risk as a result

of trying to realize behavior benefits (Bauer, 1960) of using MD to undertake their banking activities. The risks are seen as a huge hindrance to MB usage in addition to social risk. Social risk, according to Yousafzai, is the likelihood of users trailing self-image, prestige or displeasure of close relatives as a result of IB usage, while performance risks, due to deficiencies of MB websites, failure of systems servers or internet failures, have also reduced patron readiness to use IB (Kuisma et al., 2007; Yiu et al., 2007; Lee, 2009).

In South Africa, however, an opposing view was discovered when Njenga and Ndlovu (2012, pp. 1, 8) tried to measure perceived risk based on empirical data. Controversially, the study noted that perceived benefits of MB had a much stronger influence on South African banked consumer psyche than perceived risks, again, largely influenced by the perceived ease of use of a technology as opposed to perceived risk. A related study was consistent with the above. Peoples' trust in technology-enabled financial services was found to be the third most important construct (Wentzel et al., 2013) after attitude and perceived benefits.

The Njenga and Ndlovu (2012, pp. 1, 8) study highlighted above provides a basis for comparing perceived risk with ease of use and benefit. However, it does not include any discussion on MB continuance intention to help us to understand the extent to which this outcome can be relied upon and taken advantage of. The proliferation of trust studies (Alsajjan & Dennis, 2010; Ling & Daud, 2011; Martins & Oliveira, 2014) among researchers is due to risk and its effect on internet banking (IB). It is, therefore, worrying that the above study is the only of its kind in South Africa and, yet, it does not give enough information on this outcome and its antecedents, hence, leaving room for further investigation.

1.5. Innovation diffusion theory (IDT). The IDT is a classical theory that provides the foundation for technology innovation diffusion research. It models innovation adoption as a process of information gathering and uncertainty reduction with an eye to evaluating the technology (Rogers, 1995). It is rooted in economic theories, sociology and communication, which synthesize technology adoption and diffusion literature in other study areas. IDT identifies five factors that impact on the adoption of innovation such as MB in South Africa and its implementation: relative advantage (RA), compatibility (CO), complexity (CP), trialability (TR), and observability (OB).

The above notwithstanding, few studies suggest that RA, CO and CP are reliably connected to IB (Koening-Lewis et al., 2010; Yousafzai, 2012). Some have even gone further to replace CP with perceived ease of use (PEOU) from TAM in their studies using the IDT framework (Koening-Lewis et al., 2010; Puschel et al., 2010) to investigate MB.

Investigating MB CI in a country like South Africa, with many diverse cultural differences, IDT could be a good starting point. However, factors like dissemination, shared norms and people's dissimilarities need to be taken into consideration for an enhanced appreciative work.

Brown et al. (2003) conducted a study in South Africa using IDT as its theoretical framework, and stated that "Factors identified as influencing adoption and use of technology included relative advantage, trialability, and consumer banking needs, with perceived risk having a major negative influence". Their method of data collection was convenience sampling, generating 162 responses including online responses. Some 85% of the responses were from Cape Town where the researchers were based. In the words of the researchers: "The sample represented the young, educated, and comparatively more affluent sector of South African society, and, thus, the opinions of many outside of this profile were not represented" (Brown et al., 2003, p. 391). They recommended future research to identify a more representative sample of South Africans from all walks of life. The limitations of convenient sampling adopted by Brown et al. (2003) have already been attended to in this paper, let alone the size of respondents for their study (i.e., 162) that was used to generalize their results. Shambare (2011) also used IDT for his study in South Africa. He managed 124 cell phone users from Gauteng, Mpumalanga and Limpopo as respondents and found that perception of risk and security concerns slow down adoption rate. Both studies cited above stop at adoption, without hinting at continuance usage.

1.6. Technology acceptance model (TAM). TAM (Davis, 1986) posits that MB use is influenced by users' behavioral intention (BI) to use, which is also swayed by customers' attitude to use (A) – describing A and BI as interior emotional variables which directly impact customer performance. Customarily, when TAM is elaborated it captures the IS (i.e., MB) post-adoption performance, which refers to a number of performance issues after initial acceptance (Rogers, 1995). These are: continuance, infusion adoption, routinization and assimilation (Limayem et al., 2007, p. 707). These constructs are, seemingly, the same, but different terminologies will help to discover behavior after adoption of MB and how this impacts MB continuation in SA.

A study in South Africa by Wentzel et al. (2013) used 341 respondents through a house-to-house

agent collector to identify additional constructs that, when added to the original TAM, allow successful modelling of financial services' adoption in South Africa. It was determined that attitude was the most significant factor in the model, followed by PEOU, while social factors and technology self-efficacy were the least significant.

It is also worth noting that the methodologies used to collect data for the articles reviewed were that of online survey and hard-copy survey (for instance, Masinge (2010) in South Africa).

1.6. Perceived quality dimensions. Service quality (SQ) is a judgement adjudicated by a customer who evaluates a service depending on what s/he expects against what is actually provided. Electronic service (E-service), and, for that matter, MB is a service provided through an E-medium such as a mobile device, through a website enabled by the internet. The quality of such a service could be attributed to elements of this medium that play various roles in shaping this perception, such as availability of the website, and quality of information provided by the vendor on the website.

The controversy about the definition of SQ is an old problem that has led to debate in the research world. This has made some authors conclude that SQ is the level to which a service meets customers' expectations (Asubonteng et al., 1996). It is, however, a key to competitive advantage and customer retention in today's business world (Voss et al., 2004).

Oliver (1993) proposed a model intended to combine satisfaction and service quality literature and this have been applied in studies in South Africa. For instance, Petzer and De Meyer (2011) undertook a study aimed at determining different generations' perception of the quality of services and satisfaction levels with services provided by cell phone network service providers, and also their behavioral intentions towards these providers. The outcome was that Young Generation Y consumers perceive service quality levels and service satisfaction levels of these providers as being significantly lower than other generations. This will surely affect their behavioral intent. Significant correlations were found between the generation's perceived level of service quality, their perceived level of satisfaction, and their behavioral intent towards providers.

Of concern is that the above study does not seem to provide a holistic opinion of the correlation between perceived service quality, satisfaction level and behavioral intention, but rather across a section of generations. While these and other such studies report a positive correlation between perceived service quality, satisfaction level and behavioral intention, there is limited conclusive evidence to indicate which type of quality mostly affects behavioral intention. Quality could be attributed to the manner in which the provider interacts with users, or the availability of the network needed by these users, and, yet, others measure it in terms of information and its accuracy. There is, thus, a need for research to reveal the different types of quality perception and their contribution to determining MB continuance intention in South Africa.

Bankole and Cloete (2011) adopted the UTAUT to compare MB between South Africa and Nigeria. Their result showed that a SMS alert for account transactions is the most commonly used MB service in both countries. Factors such as awareness, convenience and literacy level were also revealed to influence the acceptance of MB in both countries. Bankole and Cloete's study used the UTAUT to compare MB intention and usage in both countries. The UTAUT, according to the authors, was developed for PC or fixed-line systems and technology, and, yet, it was adopted by them to test acceptance of MB without considering the special attribute of its moderating characteristics.

Bankole and Cloete (2011) research adds to the number of studies in South Africa which do not talk about moderating factors to highlight alternative outcomes for the benefit of the research community. It is recommended that demographic factors such as gender and level of education be deployed as the moderating factors, in order to unravel their effects on MB acceptance and continuance behavior to fill this gap. Studies have revealed that men are more likely to use MB than women (Laukkanen & Pasanen, 2008; Koening-Lewis et al., 2010), but men are more cost conscious of internet access and service fees than women, when using MB facilities (Cruz et al., 2010). What the scenario in South Africa is, remains unknown.

1.7. Theory of trust. The theory of socio-cognitive trust (TST) defined trust as a notion appraised by agents in terms of cognitive ingredients (Castelfranchi & Falcone, 2010, p. 401) and treated cognitive trust as a relational construct between a trustor (trust giver) and a trustee (trust receiver), which can be established in a given environment or context. Most importantly, it is also about a defined activity or task to be fulfilled.

Business people decide who they want to trust and base these decisions on what they think are "good reasons" (McAllister, 1995). The decision to trust and the pursuit for "good reasons", according to McAllister (1995), suggests a procedure by which individuals determine that someone, a group or an organization, can be trusted.

Maduku and Mpinganjira (2012) studied customers' attitudes towards usage of cell phone banking in Gauteng. The study results revealed that trust has the strongest predictive power on customers' attitude towards cell phone banking, relative to all the other variables. A total of 394 usable responses were used for the analysis in the study, which used a self-filling structured questionnaire.

Maduku and Mpinganjira (2012) stated that, due to a lack of a readily available sampling frame, they made use of non-probability sampling – in the form of convenience sampling – in order to select respondents. Selecting respondents, because they happened to be in designated malls where the survey took place and because of their willingness to co-operate with the researcher, could be expected to generate only a handful of response as observed in the case of Maduku and Mpinganjira (2012). To be generally applicable to South Africa, the method of sampling should be randomized and not self-selected, as such a sampling method can compromize the results. The sampling method excluded a section of the population which had no opportunity to meet the researchers at the mall where the questionnaires were administered.

2. Theoretical evaluation of literature review and research gaps

There seems to be a considerable overlap of constructs used to model studies than the creation of new theories that seek to unleash a discoverable surprise with supporting models. This is prevalent in the field of social recognition models (Armitage & Conner, 2001; Conner & Norman, 2005) and researches in South Africa. What is even more striking in these studies is that most of the models used did not consider the issue of trust and service quality as being something important to consider when modelling technology adoption. Yet, it is well known that in business trust is very important, especially, as it is conducted through technology without physical contact with partners. This is a gap that needs to be addressed. Again, most of the constructs used present insufficient detail with respect to informing us how different causes affect behavior psychologically, functionally, technologically, socially or emotionally.

For instance, in diagnosing satisfaction (SAT) and showing how it is linked to continuance behavior, are we talking about SAT with MDs usage, SAT with network service providers, or SAT with the quality of banking services? SAT is a psychological effect that can be influenced on others by peers. Therefore, when measuring SAT, one needs to be specific and detail to highlight how it was attained. This, then, answers the issue of whether the measurement of SAT is over emphasized or SAT is just a state of mind that dissipates quickly after a period of time when these influencers are no more. And if it could be influenced by peers, why are there no studies in South Africa that consider these constructs?

Furthermore, SQ, as demonstrated in the literature review, is dependent upon so many factors, with different assessment levels by different users. It was pointed out earlier that what constitutes quality for "A" might not satisfy "B" and vice versa. Therefore, in evaluating this construct, care needs to be taken to properly address the antecedents of this factor before any conclusion is drawn. However, none of the above studies (including those in Table 1) investigate this.

Though many industry practitioners and consultants stress the need to distinguish between usage of MDs used in MB, because the capabilities and usability of such MDs have a strong impact on MI acceptance (Gerpott, 2011, p. 2143), this paper suggests that researchers, particularly in South Africa, do not seem to bother about the type of devices used to transact MB business, thus, creating a gap for research. MB for the unbanked is being deployed in some 44 countries (Tobbin, 2012) including South Africa, and it is hoped that researchers will respond to the call for additional research and respond accordingly. For instance, most of the South African literature on MB (see Table 1) is not peer reviewed and does not reveal the type of device used because they originate from practitioners. There are just a handful of scholarly studies (e.g., Porteous, 2006; Ivatury & Pickens, 2006; Mas & Radcliffe, 2010; Mas & Morawczynski, 2009).

However, the information from these practitioners provided useful insight and contextual information on MB. For instance, Ivatury and Pickens (2006) provided significant information about the behaviors of the early adopters of WIZZIT in South Africa, as confirmed by Tobbin (2012, p. 77). It is, therefore, important to understand that, in the quest to discover factors influencing South Africans using MB, categorizing these factors will help a great deal in providing appropriate solutions to manage challenges and better understand users, so that more pragmatic and sustainable policy implementation can take place.

Showing the type of MDs preferred by users could also highlight why particular users have continued to use MB and vice versa. Determining factors that contribute to continuance behavior will help not only the research community, but also government and stakeholders such as banks, so that they can implement appropriate strategies.

3. Summary

A systematic literature review providing a model for identifying, critiquing and summarizing past studies related to MB adoption and continuance behavior in general was done, and the information was synthesized with the situation in South Africa.

A literature review of some relevant articles published between 2003 and November 2014 highlighted seven theories normally used to investigate MB continuance behavior in South Africa.

To the best of our knowledge, there are no accessible studies that investigate MB continuance behavior in South Africa, let alone studying the type of MD used. The only studies in this domain were, mostly, grey literature which, mainly, investigated only acceptance of MB in South Africa. These are summarized in Table 1.

Since MB acceptance is not the same as MB continuance behavior (Bhattacherjee and Barfar, 2011, p. 4), various studies in South Africa cited in this paper still leave a gap to be addressed, and, as pointed out before, exposing the type of MD used to undertake such an exercise will contribute a great deal to targeted policy implementation for stakeholders.

Conclusions

Future research directions

This review revealed a rapid expansion of research concerning mobile phones and financial inclusion in South Africa, although there has not been a systematic attempt by researchers to show how this phenomenon has progressed both conceptually and methodologically. Overall, the reviewed studies indicate:

- A high level of practitioner involvement between the research community and the mobile phone industry. Outcomes of this are not evidential and can lead to over- or understatement.
- Particular attempts to develop theoretical models and create an understanding of MB applications, particularly, in the area of technology adoption.
- Few primary research studies that have developed rigorous methodologies for data collection and analysis, and where approaches and lessons learned have been documented and shared.
- No studies focus on assessing MB continuance intention and usage in South Africa.
- No information on financial service behaviors and preferences of MDs used.
- Online data sampling has received much attention in recent research in other countries because of its generalizability and other advantages, but this is lacking in South Africa.

Moderating results and models to show alternative outcomes are lacking in this sphere of research in South Africa.

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