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Adoption And Use of SMS/Mobile Banking Services in Zimbabwe: An Exploratory Study

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Dube Thulani
Lecturer, Faculty of Commerce, Department of Marketing.
Bindura University of Science Education,
Postal Address: **P. Bag 1020, Bindura, Zimbabwe**
E-mails: ***tdube29@tsamail.co.za*** or ***tdube@buse.ac.zw***

Njanike Kosmas
Lecturer, Faculty of Commerce, Department of Banking & Finance.
Bindura University of Science Education,
Postal Address: **P. Bag 1020, Bindura, Zimbabwe**
E-mail: ***cknjanike@buse.ac.zw***

Manomano Collins
Lecturer, Faculty of Commerce, Department of Human Resources Management.
Bindura University of Science Education,
Postal Address: **P. Bag 1020, Bindura, Zimbabwe**
E-mail: ***colmanos@gmail.com***

Chiriseri Lloyd
Lecturer, & Sidina Richard, Faculty of Commerce, Department of Accountancy.
Bindura University of Science Education,
Postal Address: **P. Bag 1020, Bindura, Zimbabwe.**
E-mail: ***lloydchiriseri@yahoo.com***

Abstract

The study sought to investigate the benefits of SMS banking and the challenges faced by banks with the view of adopting this technology as an alternative delivery channel. The exploratory research design was used for the study. A sample of fifteen commercial banks was chosen including those that offered the service and those that are yet to adopt SMS banking. The main respondents were banks' marketing staff, electronic banking personnel who provided most of the information on the SMS banking services offered, level of adoption, volume of transactions and the security of the application. Data was gathered over a period of a month using a questionnaire as well as follow up interviews. Data was presented in the form of tables and graphs while descriptive statistics were computed and used in the interpretation of the findings. The findings showed that although SMS banking was first launched in 2004, the service was still in its infancy. Evidence showed that accessibility and affordability were the major drivers to the adoption of SMS banking. The research confirmed the assertion that the appeal is more about accessibility and affordability in developing countries. This has been exacerbated by the lack of regulation for electronic banking in Zimbabwe. The study recommended an increased awareness campaign by banks and development of policy and regulation for electronic banking in Zimbabwe.

Key words: adoption sms banking e-banking

Introduction

The advent of information and communication technology has taken the business environment by storm, and in response retail and corporate players are accordingly adjusting their ways of conducting business so as to keep abreast with the current developments. The banking sector is the most affected as it continually looks for ways of relating with customers, to reduce costs, improve efficiency and differentiate products and services. One trend in this line is the use of self service technology (Perumal and Shanmugam, 2004). Technology is no longer an after thought, in forming and shaping organization's strategy, but the actual cause and driver (Kalakota, Ravi and Marcia, 1999). Short Message Service (SMS) banking is one of these Information and Communication Technologies (ICTs) that have revolutionized the banking sector alongside other electronic banking technologies and many businesses are launching mobile services ranging from information communication to transaction processing.

SMS Banking

Short Message Service Banking (SMS banking) is the delivery of banking and financial services ranging from stock market transactions, administration of bank accounts and accessing customized information via telecommunications devices (Tiwari and Buse, 2007). The increasing application of wireless technologies of which mobile phones are just one example, has provided banks with the opportunity to provide their services anytime, anywhere (Birch, 1999). However, since its incarnation, SMS banking has suffered from slow speeds, lack of standardization and anemic consumer adoption but speed and device issues have now been addressed though consumer interest has not caught up (Khan, 2008). SMS banking is not the first e-banking service to be rolled out. Other technologies that preceded SMS banking include Automated Teller Machines (ATMs), Internet banking and telephone banking, showing that the race towards the creation of a cashless economy started long before the introduction of SMS banking. This shows that the race towards the creation of a cashless economy started long before the introduction of SMS banking. Leow(1999) stresses that online banking will emerge as a competitive and money saving tool rather than a revenue earner as it has greater flexibility and low costs on business transaction.

Functionality of SMS banking

Mobile banking technologies operate on most banks' existing host systems. They are designed in such a way that allows exchange of information between them and the existing banking systems. The SMS channels can be linked to host systems through various means depending on the volume of the messages to be pushed for example simple modems or leased lines (using communication protocols like SMMP). Brown et al,(2003) revealed that banks in South Africa are offering cell phone banking services via the Wireless Application Protocol (WAP) and the SMS based Wireless Internet Gateway (WIG) technologies. SMS uses the GSM special signaling channel instead of the voice channel; and this also strengthens the reliability of this banking channel (Adagunodo et. al, 2007). The SMS computer application runs on corporate servers that are connected to SMS networks through specialized connectors and gateways connected to the SMS centers of mobile operators.

SMS banking Services

The SMS deliverables range from account information enquiry to transaction processing tasks. The list of features include: account balance enquiry, mini-statement requests, payment of cheques issued on account, account to account transfers, ATM or credit cards, electronic bill payments and purchasing mobile airtime. The SMS services can be categorized into Push SMS and Pull SMS.

Push SMS and Pull SMS

Push SMS is sending a message from an application (i.e. SMS server) to the mobile phone. It is a one-way message initiated by the mobile application. Push services include periodic account balance reports e.g. monthly reports of salaries and other credits to the account, large value withdrawals on account or from the ATM, and One-time passwords authentication. Pull SMS refers to sending a request and getting a reply, hence, it is a full duplex scenario where a user sends a request to the SMS banking application and the application responds with the information required. Pull SMS includes account balance enquiry, transfers between customer's own accounts say, from a savings to a current account, and electronic bill payments, (Adagunodo et.al, 2007).

Benefits of SMS banking

The following table presents the major benefits of SMS banking and the related literature.

Benefit	**Related Literature**
Convenience	Butcher(2008), Ivatury and Mars(2008), Karjuluoto(2002) and Adagunodo et al(2007).
Availability	Shetty (2005), Adagunodo et al(2007)
Accessibility	Cracknell(2004)
Reduced Costs	Adagunodo et al(2007), Ivatury and Mars (2008)
Portability	Adagunodo et al (2007)
Labour Free	Adagunodo et al (2007)
Wider customer reach	Finmark(2004)
Offers better security	Birch(1999)

It can therefore be presumed that SMS banking is a lucrative banking option and is likely to cover up the gaps left by other previous banking solutions. The main objective of this study was to investigate the benefits of SMS banking, the challenges being faced with

SMS banking as well as the level of adoption of this technology as an alternative delivery channel.

RESEARCH METHODOLOGY

Research Design

The study used an exploratory research design that sought to investigate the adoption and use of SMS banking which is a new phenomenon in the Zimbabwean banking sector. Kotler et al.(2006) states that the objective of exploratory research is to gather preliminary information that will help define the problems and suggest hypothesis. This research design was chosen because of its suitability for the phenomenon not sufficiently known, the purpose being to provide explanations and comprehension of such little understood phenomenon. The research targeted commercial banks i.e. those that are offering the service and those that are yet to adopt SMS banking. The banks' marketing staff and e-banking personnel were the main respondents and they provided most of the information on the SMS banking services offered, the level of adoption of the service, volume of SMS transactions, security of the application, the set up requirements among the information sought. Questionnaires and telephone interviews were used in this study, i.e. two sets of questionnaires were designed, one for the banks currently offering SMS banking service and the other for those who had not yet adopted the service. A structured questionnaire was adopted and modified from our previous study on the adoption and use of internet banking (Dube et al, 2009). The instrument was pre-tested with a sample of three commercial banks and modified to increase its clarity while peer evaluation was also undertaken to shape the final questionnaire design. The questionnaires had the following sections: respondents' identity, benefits and challenges of SMS banking services, SMS banking versus other e-banking technologies. Due to commercial confidentiality and sensitivity of the banking information, the questionnaire was designed in a manner that maintained anonymity of respondent and the banking institution. Interviews were basically used to screen the respondents and introduce the researchers before distributing the questionnaires.

Data collection and analysis

The study sample consisted of all commercial banks in Zimbabwe. The questionnaires were administered in Harare (the Capital city where most of commercial banks are head quartered). A total of fifteen (15) questionnaires were distributed and of these ten (10) were filled and returned giving a sixty seven percent (67%) response rate. Data was collected over a month, descriptive statistics were computed and used in the interpretation of the findings. Data was presented in the form of tables and graphs.

Empirical Results

Data collected was coded before being analyzed. Respondents' profile was presented first followed by the section on SMS banking adoption, sms services/application, benefits of sms banking, challenges of sms banking and lastly sms banking versus e-banking services.

Respondents' profile

The sample consisted of fifteen (15) banks i.e. banks offering the SMS banking service and those that have not yet adopted the service. Forty percent (40 %) of the respondents within the banks were e-banking staff, 20% were marketing staff and other varied respondents constituted the remaining 40%. The distribution is illustrated in figure 1 below.

Figure 1: **Respondents**

SMS banking services

All (100%) of the banks indicated that balance enquiry, mobile airtime top-up and electronic bill payment were the most frequently used services while 80% showed that funds transfer and mini-statement request where also popular with users. The results in the table 1 below show that all the banks offering SMS banking were providing the top five services. Other automated services which include periodic account balance reports, reports of credits on accounts and reports of huge withdrawals were only being offered by 20% of the banks as in the table above. The results imply that most of the banks which had unveiled the SMS banking service were currently focusing on interactive or pull services. On service usage, all (15) the banks indicated that all the services that are offered have at least been used by customers. From the random interviews held by the researcher it was revealed that most people still prefer those services which do not involve cash movements and that on funds transfer the transferred amounts were relatively small. For those complex transactions and those involving large amounts of cash it emerged exposed that face to face interactions were still preferred by customers.

Table 1: SMS banking Services

Service	**Frequency (N)**	**Percentage (%)**
Balance	10	100
Funds Transfer	8	80
Electronic Bill Payment	10	100
Mobile Airtime Top-up	10	100
Periodic Account Balance Report	2	20
Mini-Statement Request	8	80
Reports of Credits on Account	2	20
Reports of huge withdrawals on accounts	2	20

SMS Service Period

Table 2 below shows the percentage number of banks that launched SMS banking services since the year 2004. The results showed a steady adoption of the service by banks over a period of four years.

Table 2: Period of offer

Year of Launch	2004	2005	2006	2007	2008
No of Banks (%)	7%	0	20%	33%	40%

The oldest SMS banking service in Zimbabwe was launched in 2004 as in the table above. Eighty percent (80%) of the SMS services are only 1-2 years old. This indicates that the service is still at its infancy stage. This could also had impact on the optimal use of the service as it may mean that most customers were not yet familiar with the detailed features of the service and had not yet developed trust in this technology.

SMS banking benefits

The figure 2 below shows the level of support of the listed benefits by the banks offering SMS banking.

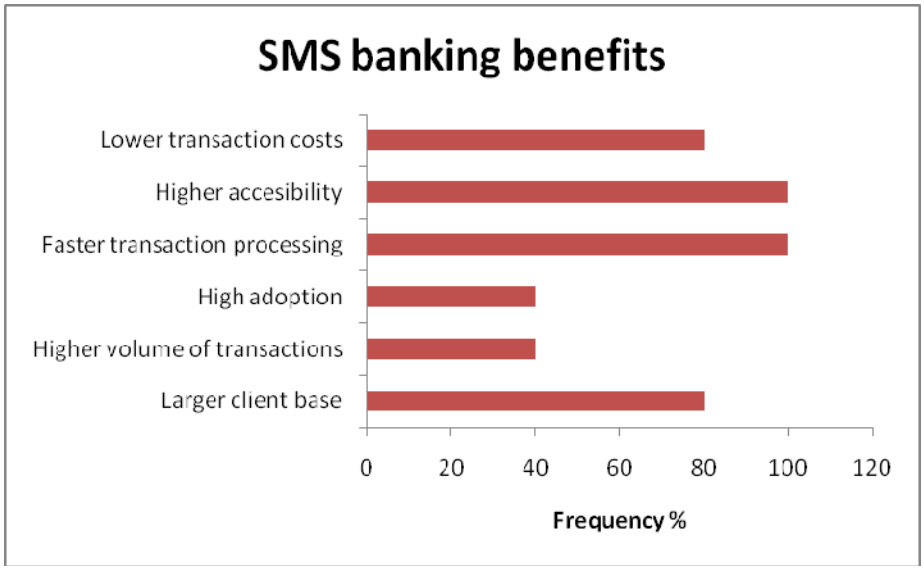

Figure 2: SMS banking benefits

**Frequency % indicates the percentage of banks that indicated that the benefit applies to them or their customers.

Figure 2 illustrates that faster processing of transactions and higher accessibility were regarded as the best benefits by the banks with 100% of the banks having supported those benefits. Lower transaction costs and extended client base gained 80% support of the banks. It is clear that mobile phones in Zimbabwe have a higher penetration rate than other electronic tools like computers and telephones for example the teledensity (number of people per telephone) was estimated at 3 per 100 in August 2009 which was way far below the mobile penetration. The benefits that the SMS banking service had high adoption by customers and that the service is associated with higher volumes of transactions got support from 40% of the banks offering the service.

Adoption of the service

Sixty percent (60%) of the banks, from the interviews conducted, acknowledged that the SMS banking service's acceptance was low when the service was launched and the other 40% reported that the uptake of the service was high on introduction. It was further inferred that the uptake on launch of the service was high for those banks that launched the service later as compared to the pioneers of the service. This might be because most customers had already seen the service in operation for sometime and were therefore a bit familiar with the service. The bankers also agreed to the fact that there was an increase in the volume of transactions after the SMS banking service was launched. None of the banks reported that the volume of transactions remained static or decreased as presented in the table 3 below.

Table 3: Effects of SMS banking on the volume of transactions

Behavior of the volume of transactions	**Increasing**	**%**	**Decreasing**	**%**	**Static**	%
Number of banks and %	5	100	0	0	0	0

As more and more people were going mobile this could have been the cause for the increase in the volume of SMS transactions and also the realisation of the convenience brought about by this new technology by customers had a positive impact.

Reliability and Security of SMS/mobile banking

Figure 3 below presented the level of reliability on a scale of 1-5 and the following results were obtained. From the results it was found that 40% of the banks put the reliability level at 4 (or 80%), another 40% placed the reliability at 60% and 20% respectively. This implies that bankers rated the SMS platform as being fairly reliable. On security, the results showed that all the banks offering SMS banking were relying on the password system and also SIM card registration where transactions can only be carried out with registered SIM cards. However no bank had employed one-time passwords where the customers are given once-off passwords which expire once they are used on one transaction.

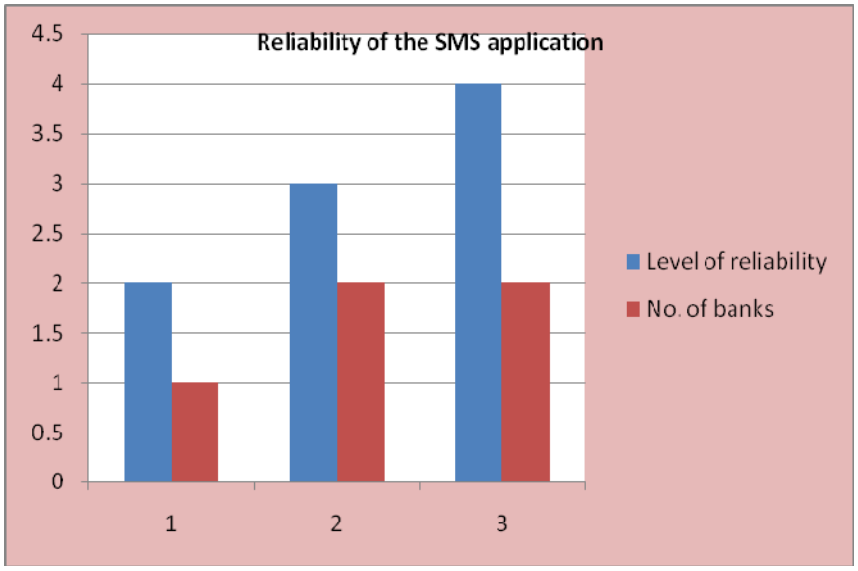

Figure 3: Reliability of SMS application

Compatibility of the SMS application with other e-banking technologies

The results have shown that the SMS application was to a greater extent compatible with other e-banking technologies. Sixty percent (60%) of the banks had their SMS systems compatible with Internet banking with one bank having the Internet banking and SMS banking working on the same platform. Forty percent (40%) of the banks had their

SMS applications still being used as stand-alones probably due to lack of the necessary infrastructure. This was a limiting factor since there were no chances for the cross channeling facility where say an internet banking transaction report can be sent to the customer via their mobile phone or vice versa.

Other e-banking technologies

Table 4: Service availability

Number of banks offering				
Service	**With SMS banking**	**%**	**Without SMS banking**	**%**
Internet banking	5	100	3	60
Telephone banking	1	20	2	40
PC banking	0	0	1	20
ATMs	5	100	5	100

The third row means that of the banks that had already introduced SMS banking, five or 100% also had

Internet banking and for those banks without SMS banking three of them or 60% also had Internet

banking. It is clear from the above table that all the banks that were offering SMS banking also

offered Internet banking and had ATMs (the other two leader services in convenience banking).

Challenges with the current e-banking facilities

The challenges are listed in the table and the related graph follows.

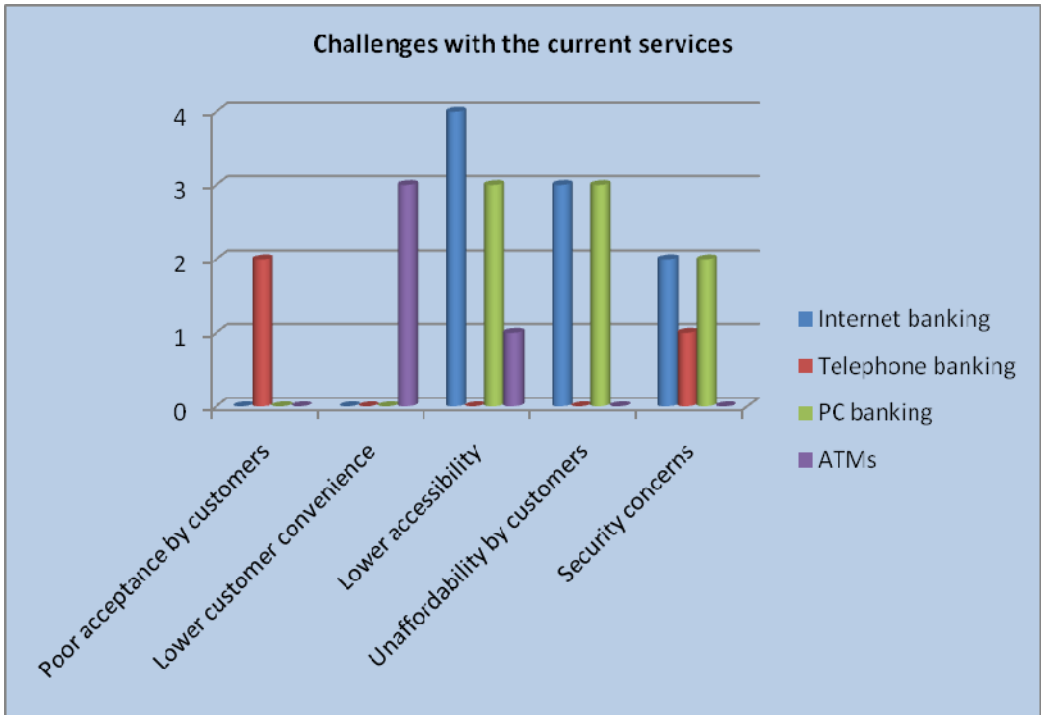

Figure 4: Challenges with e-banking facilities

Lower accessibility, unaffordability by customers and security concerns were found to be the most prevalent challenges with Internet banking and PC banking. ATMs had lower levels of customer convenience as their greatest challenge while telephone banking faced the biggest challenge of poor acceptance and usage by customers.

Inhibitors to the introduction of SMS banking

For those banks that had not launched mobile banking, 37% cited set-up costs as being the major hindrance to the introduction of mobile banking. The other two factors, unlikely adoption by customers and that customers show satisfaction with the current services gained 27% support apiece from the banks while 9% was for the fact that no research had been commissioned on the service. The pie chart below gives the graphical representation of this distribution.

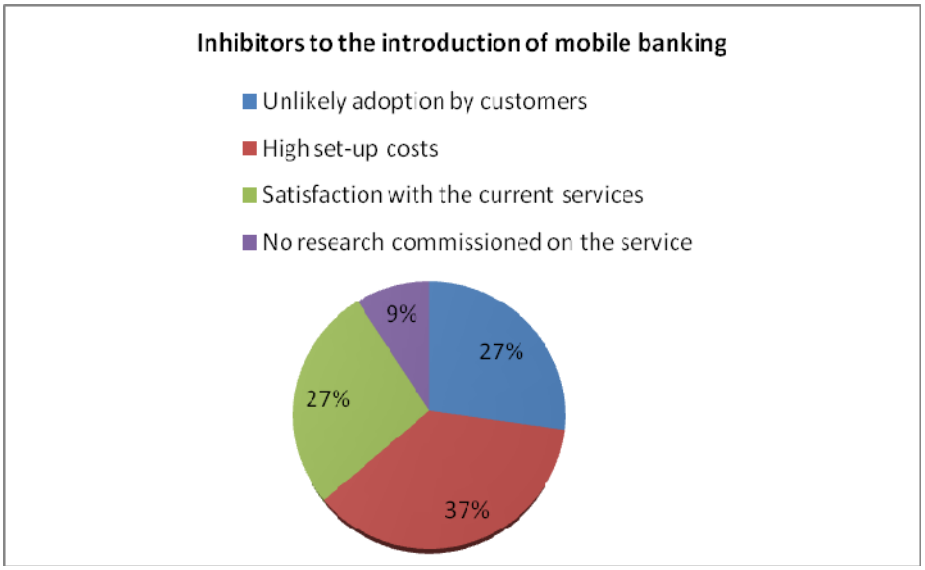

Figure 5: Inhibitors to the introduction of SMS banking

However though these banks indicated that there were high set-up costs of SMS banking, for those banks with the service, 75% indicated that the set-up costs for SMS banking were lower than those for Internet banking and 100% of the same banks showed that mobile banking had lower set-up costs than ATMs. This could probably be due to the fact that the mobile platforms were installed on the existing host systems translating to lower set-up costs than those banks that were to start from scratch. On the potential of the mobile banking service to boost customer convenience, from the interview responses, indicated that all the banks agreed to the fact that the SMS banking service had the potential to boost customer convenience more than any other former e-banking breakthroughs. In addition to that, banks that did not offer the service indicated that plans were underway to introduce the mobile banking service in the near future. Some of these banks had already introduced 'stints' or small components of mobile banking such as SMS alerts. This indicates that there were pent-up plans by these banks to launch the service as this could bolster their competitiveness in the sector.

DISCUSSION

The results showed that SMS banking was first launched in 2004 and hence the service was still at its infancy stage. The research findings confirmed the findings by Amin et al (2005), Donnar and Tellez (2008) for developing countries. SMS banking is an effective banking and financial service delivery channel since it was noted that the major challenges of the earlier electronic banking technologies, like poor accessibility, narrow customer base and non affordability by customers were ranked as the major benefits of SMS banking. Evidence showed that accessibility and affordability were the major drivers to the adoption of SMS banking confirming assertions by Cracknel (2004) that the appeal of mobile services is more about accessibility and affordability in developing countries. Furthermore, it strengthened findings by Brown and Molla's (2004) findings that the adoption of internet and perceptions of internet banking among internet users

were significantly different from those of SMS banking among mobile phone users implying that the success of internet banking cannot be directly linked to that of SMS banking. It is therefore implied that SMS banking has to a large extent greater potential to boost the convenience banking than any of the former e-banking breakthroughs due to its anytime, anywhere aspect and due to the fact that mobile phones have higher penetration rate than internet (Shetty, 2005). As for the main challenges of SMS banking like network coverage limitations, solutions to the problem are at an advanced stage , as some operators in Zimbabwe have launched the 3G network, GSM roaming and Interactive Voice Response facilities. Such services boost the accessibility and user friendliness of SMS banking and hence its adoption by both banking institutions and customers. This has the potential of increasing its usage by customers. However, lack of regulation for electronic banking in Zimbabwe remains a setback for mobile banking, it needs to be addressed to ensure customer trust and to make it more effective. In a related study in Malawi similar observations on policy and regulation problems were made (Saidi, 2008). It can be concluded that developing countries lag behind as far as technology regulation is concerned impacting negatively the adoption of technology that would otherwise improve customer services.

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