Analysis of E-Banking as a Tool to Improve Banking Services in Zambia

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ABSTRACT : *This research was about e-banking in Zambia. It was about analyzing e-banking and how it impacts on service delivery on the country. The study was qualitative and quantitative in nature and hence a triangulation approach was adopted. The case study was Bank of Zambia and the study periods under consideration are the years ending December 2012 and year ending December 2013. These periods were considered enough to give appropriate findings on the data that can be used for trend analysis on different variables. The data analysis was done using correlation coefficient tool for statistical data and it is a formidable tool for testing relationships between variables leading to a strong relationship reflected by +1 and a weak relationship reflected by -1. The study findings revealed that ZIPPS/RTGS have a +1 correlation coefficient, cheque image clearing also has +1 correlation efficient, EFT has +1 correlation coefficient, and mobile money has -1 correlation coefficient. This means that, the first three have strong variables relationship and mobile money has a weak variable relationship. Increased volumes in mobile money statistics does not mean increased value in USD terms as shown in table 2. Tests on POS and ATM data returned all positive correlation coefficients of 0.9999961 and 0.999999327 with associated negative returns of -0.08889 (9 percent) and -0.104842 (10.4 percent) respectively as in table 3. Clearly, it is crucial to invest heavily in the telecommunication, IT sectors and to make e-banking safer and trusted to gain acceptance by the banking population in the country.*

KEY WORDS : *E-banking, ZIPPS/RTGS, e-cheques truncating, electronic clearing systems, point of sale.*

I. INTRODUCTION

Financial institutions have overtime realized the virtue of going online with banking products. It is an easy and cost efficient way of banking for both the banked and the banking institutions (Amadeh & et al, 2009). Bank of Zambia has been used as a case study for this research as it acted as a source of credible data for use in the analysis of research findings. E-banking products are aimed at improved service delivery and this can be achieved if all is done professionally and with full disclosure of information to the users (McKnight et al., 2011; Koo & Wati, 2010). It was therefore vital to explore if service delivery can be improved through adoption of e-banking in Zambia. The development of e-banking depends on the development of enabling IT infrastructure like and how the financial institutions make it attractive to the user (Masrek et al., 2013; Bank Negara Malaysia, 2012; Zhou, Lu, and Wang, 2010). For purposes of this research, the data considered was for two years of 2012 and 2013. This was considered enough to shade light on how banks are faring in e-banking through data obtained from the sector regulator. Testing of the data was done using statistical data test tool of correlation coefficient to give a reflection of the variables relationship. The finding should help in impacting policy formulation on the smooth operation of e-banking in Zambia.

II. LITERATURE REVIEW

The banking sector has continued to revolutionize transforming from the world traditional branch banking to a new world of modern banking using technology through development of e-banking products and facilities like ATMs, e-utilities payments, e-loan applications among others Sarokolaei et al., (2012); King (2012); Amadeh & et al (2009). Though e-banking has generally been accepted in most countries with developed economic, telecommunication, political and social systems, it is still a challenge in sab Saharan countries which includes Zambia among others (Masrek et al., 2013; Bank Negara Malaysia, 2012; Zhou, Lu, and Wang, 2010). The adoption of e-banking and acceptance depends mostly on security and trust of for example banks' website security features, safety and reliability of networks, phone trust etc. If these are assured, then customer acceptance of e-banking and e-commerce generally would improve (McKnight et al., 2011; Koo & Wati, 2010).

In Zambia, the central bank has introduced an e-cheque truncating system which uses cheques imagery for clearing purposes and this can really help in clearing cheques on time hence shorting clearance time and more so this would facilitate service delivery for cheques coming from upcountry financial institutions (Bank of Zambia, 2013). Financial institutions are always on the move to innovate for new e-banking products and some banks are now going into cloud banking to facilitate internet and mobile banking as the next generation of cloud banking (Finance Bank Zambia, 2013; Iyer & Henderson, 2010). Cloud banking makes customer information susceptible attacks by hackers since information is kept in the virtual open environment and this is to say that, it could be a good technology, but it needs to be made safer to gain trust and confidence of customers (Bose et al., 2013; Lombardi & Pietro, 2011; Coleman, 2011). For banks like FNZ in Zambia that have ventured into cloud banking, it could be a good service offer to its clients if it does not compromise the security of customers' accounts and other vital information and there is also need to study if there is a law that relates to cloud banking in Zambia. This research will establish the intricacies of e-banking generally in Zambia and propose ways how it can be improved to the benefit of the banking community.

Customers are happy with banks that are part and embrace the digital age, though what is needed is clear communication between the banks and financial institutions especially on the pricing of e-products, security of the e-banking platforms, etc, this will improve customer satisfaction rate as for instance globally 22 percent of banks will be satisfied if their banks provides clear prices without hidden costs and 12 percent would want to see their banks provide bank online services (Kirakosyan & Dănăiaţă, 2013; Morgan et al., 2012); Ernst & Young, 2012). Security protocols development would help in safe guarding customer information and should be made sophisticated for the hackers and personalized to each user of the e-banking facilities and tough penalties should be imposed on the wrong does who would want to misuse technology to still customer information as argued by Hamidi et al., 2013). This is for instance to say that for instance e-mails from banks should be sent through secure lines, SMS, phone calls, alerts etc. and some of these security issues can be enforced through Flask architecture, if you consider the period between 2010-2012, fraudulent e-commerce transactions moved from USD 2.7 billion to about USD 3.5 billion accordingly (Hamidi et al., 2013; Online Fraud Report, 2013). The has to be concerted efforts by the stake holders to combat these online crimes and these can be achieved that all the involved stakeholders unite for a common cause and invest in the required resources to develop safe online infrastructure and also to lobby the government to pass a tough legislation on online crimes. Since this research has been conducted in Zambia, policy makers can build on the findings and recommendations to make online transactions safer for the population.

III.   IMPORTANCE OF STUDY

Zambia as a country has experienced rapid economic expansion which has culminated into having a rapidly growing banking sector that has seen explosion of many e-banking products offered to bank customers, however the challenge is that majority of even the banked population may lack the skills of using internet or computers generally and they may not be also aware of the costs that may be involved leading to client exploitation as done in other countries like Czech, European countries etc. (BOZ, 2013; Soukal, and Hedvicaková, 2011). If clients in developed countries are having issues with e-banking, then it means the situation would be complex in developing countries like Zambia and other sab Saharan countries where internet penetration has not reached some major populations. The digital era has seen development of e-banking and e-commerce platforms by financial players in the market, however there has been an uphill task of ascertaining whether or not such platforms improves service delivery. According to Kirakosyan and Dănăiaţă (2014), e-banking can only succeed if it has full support of the customers with full information disclosure to the clients which has really been a major failure on the part of the banks hence leading to mistrust of the technology due to hidden costs and the insecurity involved (Morgan et al., 2012; Ernst & Young, 2012). This research has given importance on understanding the state of e-banking in Zambia and how it has been embraced by the banking community and other stakeholders.

In principle a good e-banking platform should lead to a good e-service quality as this is most likely to give satisfaction to the consumers as argued by Zavareh et al., (2012). It could be argued that, e-banking can only be embraced well with clear laws regulating it and a developed secure telecommunication network. Zambia is still growing its internet infrastructure and sometimes internet access can be challenging (AICD, 2010). Findings from this research should be able to reveal the success and failure stories of e-banking and how the challenges can be overcome from instance through government interventions, huge investment by financial institutions into developing the product etc. A research done on pioneer countries of e-banking in Europe revealed acceptance rate to be more that 50 percent and one say that it is because of developed banking systems and secure and reliable communication network (Sarokolaei et al, 2012). This research should be able to shade

light on what can be done by countries like Zambia to reach e-banking acceptance rate of about 50 percent. It is a bit over optimistic, but with the right infrastructure, polices, laws etc, it is an achievable milestone. The supervisory authority in this case bank of Zambia has to engage financial institutions to be openly truthful about the good and bad of using e-banking platforms and mainly what the customer would be interested in is quick and secure service delivery and at a low cost. Future direction on e-banking and e-commerce in Zambia can be crafted through use the findings as a basis since it is real data and real views from the people that have a stake in e-banking product portfolios.

IV.   STATEMENT OF THE PROBLEM

The banking industry in Zambia has undergone a lot of structured transformation from the time when there were a few financial institutions owned by the government and relying mostly on brick and mortar banks to where almost currently all the 19 banking institutions are employing some sort of technology to do their business (Bank of Zambia, 2013). As the number continues to grow, bank of Zambia would need to employ technology in monitoring and supervision of the banks. Realistically all the books employ technology like use of ATMs, cloud banking, internet banking among other services (Mwatsika, 2014; FBZ, 2013; Mazumdar and Giri, 2012). Technology should be employed to ease service delivery and it should be monitored by the regulator to ensure it is not abused by the banks to the disadvantage of the bank's customers. This view is supported by Zavareh et al, (2012). They are of the view that e-service quality should a barometer on performance e-banking products and customers' satisfaction should be at the fore front of the initiator of the banking products. This research has endeavored to understand the acceptance of e-banking and how it improves banking services delivery in Zambia. The central bank has been used as a case study because it regulates banking and general financial services in the country.

a. Research objectives
1. Understand the acceptance of e-banking in Zambia by the stakeholders
2. Evaluate effect that e-banking has had on to the banking industry and other stakeholders

b. Hypothesis
1. Embracing e-banking improves service delivery to the benefit of users of banking services.
2. E-banking can only be effective and fully acceptable by the banked if a country has a well developed telecommunication infrastructure with IT savvy people.

V.   RESEARCH METHODOLOGY

A thorough description of the style used in this research is done here in this section. The researcher concentrated on using secondly data for this research. The data was captured from the reports, and briefs published by the central bank of Zambia also known as Bank of Zambia (BOZ). There was a trend observation of the performance of e-banking for two years of operation namely for the years ending 2012 and 2013. These years were considered appropriate for the study because it is during these periods that there were increased banking activities and many banks in the country were offering e-banking products (Bank of Zambia, 2013). The central bank was a case study for this research because it is the regulator of the banking sector and therefore, it served as a good source of e-banking data that was used in the study and this was considered reliable and easy for justification of the research findings. For any given e-banking products, levels of activity were observed, the volume of transactions involved and the associated value in USD and a description of the percentage if any. This was for the case of ZIPPS/RTGS, e-cheques, electronic clearing systems and mobile money statistics. As regards the automated teller machines (ATMs) and point of sale machines (POS), observed was the trend in the growth in the number of machines, associated volumes and the values involved in USD. A quantitative and qualitative (Triangulation) approaches were adopted due to the data involved that helped in the analysis and answering of the set research questions. It was vital to observe and ascertain the level of dependence or independence of the variables and for this reason, a correlation analysis (coefficient correlation technique) was used for these test in the data analysis. With the use of this approach, a + 1 reflects a strong relationship between the variables, and -1 reflects a weak relationship between the variables. From the study of events/trends through analysis of data collected, a reflection will be done or seen on e-banking adoption rates and through the co-efficient computed from the data, then, one should be able to tell for example, that if the issuance of debit cards increases, and their use has increased through observing volumes and values associated, then e-banking will be doing well and would only need to be made better through awareness campaigns.

VI.   RESULTS AND DISCUSSION

Data analysis of research findings has revealed a strong relationship between variables on all the e-banking products involved in the scope of this research in Zambia using BOZ as a case study. The correlation coefficients obtained from data analysis are between -1 and +1. As one variable is impacted on, it will lead to a great positive change on the realizations or results. This is explained in detail as per results of each product.

TABLE 1 PERFORMANCE OF ZIPPS/RTGS IN THE TWO YEARS OF 2012 AND 2013

	2013	2012	change
Transactions	294,503	234,948	20.2 percent
Value (USD)	82,953,133,689.80	70,614,981,979.63	14.9 percent
Level of activity on cheque image clearing as of years ending December 2013, an 2012			
Year	Volume of Transactions	Value (USD)	
2013	3,200,202	5,961,098,703.36	
2012	2,800,759	5,886,632,638.88	

Source: Bank of Zambia, 2014

A reflection on table 1 portrays a picture where one can see that ZIPPS/RTGS transactions increased by 20.2 percent from year 2012 and this resulted to an increase in sales of 14.9 percent by 2013 from 2012. This resulted into a +1 correlation coefficient reflecting a strong relationship. The same applied to the cheque imaging clearing system where a strong relationship was observed in a sense that when the volume of transaction increased from 2012 by 12.4 percent for 2013, the associated value also increased by 1.24 percent for the same years accordingly. The correlation coefficient obtained was +1 data analysis. What this shows is that e-banking products and services can improve returns for the business, but all that is vital is to make cost effective and user friendly for the users.

TABLE 2 ELECTRONIC CLEARING SYSTEM AND MOBILE MONEY STATISTICS

Electronic funds transfer	2013	2012
Transactions	4,643,599	4,027,061
Value (USD)	2,683,152,486.63	2,437,997,711.39
Mobile Money statistics		
	December 2013	December 2012
Volume	24,412,326	17,430,411
Value (USD)	150,127,532.19	222,491,114.53

Source: Bank of Zambia and Author, 2014

The adoption of EFT in Zambia has been growing steadily considering the figures in Table 2 where, volume of EFT transactions have grown tremendously over the years reflecting a 13.3 percent in volume growth and 9.1 percent in sales revenue for the years 2012 and 2013 respectively under consideration . Once such a growth trend is maintained, it will relieve bankers from the burden of transaction real cash to going cashless which is a step in the right direction for the country. The relationship of the variables was also tested using the correlation coefficient statistical technique and the result were + 1 for EFT and for Mobile money facility, it -1 showing a very weak relationship between variables. Whereas the volume of transactions has increased by 28.6 percent from 2012, the revenue realized dropped by 48.2 percent by the year 2013. This is indicates that, the population in Zambia are not confident with the use of mobile money or it could be that, the facility is not within the reach of many users who could be residing in the unbanked areas. Alternatively, mass education facilitated by telecommunication companies on the efficiency and cost effectiveness of using mobile money is needed. Looking at the figures in table 2, the volumes are high, but revenue is low or reduced, suggesting that, it could be the people with low incomes embracing the facility whereas the rich are shunning it a way in preference for traditional banking institutions hence the justification for positive returns on the use of EFT.

TABLE 3: POINT OF SALE MACHINES AND AUTOMATED TELLER MACHINES IN ZAMBIA

Year	No. of POS Machines		Volume	Value (USD)
2013	2,578		1,983,089	138,831,740.30
2012	2,025		1,677,179	151,173,059.51
Automated Teller Machines				
Year	No. ATMs	No. Cards	Volume	Value (USD)
2013	744	2,104,860	38,152,320	3,427,487,024.54
2012	643	1,676,982	34,152,340	3,467,319,234.67

Source: Bank of Zambia, 2014

The country has seen an increase in the number of POS by 21.4 percent for 2013 and this has also lead to an increase in volumes by 15.4 percent whereas the associated returns have fallen by 9 percent. A correlation coefficient test on the date is 0.9999961. The test shows that there is a positive relationship between the variables, especially the number of POS and the volume levels, but this has no direct impact on the values involved and hence, in this case, there was a drop in revenues by 9 percent. It would be logical to say that people transacting using POS are only doing it on small values and not on big transactions involving huge amounts. In such cases there is need for mindset change for the banked and holders of plastic card. This can change with the concerted efforts of the government, financial institutions etc. on making people want to use POS and hence they should be made cheap and safe and thus become a preferred choice of transacting. Every financial institution in Zambia owns at least an ATM (BOZ, 2013). So data test yielded a correlation coefficient of 0.999999327 which show a positive relationship between especially where an increment change in the number of ATMs leads to an increase in the number of ATM cards and the volume of transactions involved. However, this has no direct relationship on the associated values where a reduction of 1.1 percent has been realized for the year 2013 even though the volume increment has been realized of 10.4 percent. More efforts are needed by financial institutions to encourage users to transact using ATMs, for instance by giving preferential rates for ATM users, and more so, they can try and make it expensive to transact on counter, then, this will push clients to opt for the use of ATMs. This will increase efficiency and effectiveness in the banking industry in the country.

VII. CONCLUSION AND RECOMMENDATIONS

E-banking is the buzz word in today's 21st century and it has been made a must for banking institutions globally and locally. Financial institutions would become in effective in today's global village if they are operating without employing some sort of e-banking product. Looking at Zambia, quite a number of banks have gone into even cloud banking meaning that in the Zambia, it has been taken to the next high level. Realistically, the major e-banking products on the Zambian market are ATMs, POS, E-cheque image clearing system, internet banking, EFT, Mobile Money, Text Messaging, e-mails etc. What has been realized in the scope of this research is that in most cases, the increase in one variable leads to an increase in the other, but not necessarily on the values involved. This indicates that the banked population in Zambia has not fully embraced technology as an alternative cheap form of banking. Sensitizing programs are vital in making people change their banking behavior as this will positively impact on the revenue for the financial institutions and the banked will receive are quick, efficient and cost effective service. Financial institutions should make certain banking transaction compulsory to be done online by the customer without visiting the branch. This will encourage many to go online banking. All that are being proposed cannot be possible without a solid legislation on e-banking. The regulator has to have a sharp eye on institutions offering e-banking services otherwise; it can become an avenue for professional abuse. The central bank could also think of going live with some e-bank supervision software which captures the activities of all financial institutions in the country on real time. This will make them cage and hence act professionally.

VIII. ACKNOWLEDGEMENT

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