

Reality of Having a Cashless Society in Rwanda: Case Study- National Bank of Rwanda

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ABSTRACT : *This research was about the reality of having cashless society in Rwanda. It is argued that having a cashless society is less risky than having cash based economy which involves heavy costs of dealing in hard cash. Since Rwanda is considered a cash use society and partly cashless especially where they use EFT, POS etc, it was vital for the researcher to explore whether or not the Rwanda economy can completely become cashless. National Bank of Rwanda (BNR) was used as a case study simply because of its suitability to provide relevant, reliable and accurate data and data used was for the period ending June 2012 and period ending 2013. The study took an exploratory approach for purposes of understanding the possibility of achieving a cashless society and correlation analysis was used to find the relationship between variables. The analysis of the data through correlation showed that it is possible to achieve a cashless society provided increased investments are made in the new and already existing electronic products by commercial institutions and government where possible and to have governing laws and awareness of the masses. For instance it was clear with correlation coefficient of +1 that once that number of ATMs was increased by commercial institutions, there was a high corresponding increase in the number of transactions and this showed a strong relationship. For the year ending June 2012 and June 2013, it showed also that as the number of POS increased in Rwanda from year to year and so was the number of transactions and the amounts involved showing a correlation coefficient of also +1 and this was also the case with three electronic payment systems in Rwanda namely mobile payment, mobile banking and internet banking for the two periods as in table 2 which revealed a coefficient correlation of 0.65937777 which is a strong relationship.*

KEY WORDS: *Cashless society, cash use society, electronic funds transfer (EFT), point of sale (POS), remote banking, Automated teller machines (ATMs), coefficient correlation*

I. INTRODUCTION

Economies that are developing should be keen to move from cash based economies to cashless society since it is cheap, safe and convenient for customers especially those that are information technology savvy (Adeoti, 2013). It is appreciated in most countries that cash is the king and people prefer to hold cash than just a plastic card where you can only transact electronically; where they fear that their security and that of their cash may be compromised as argued in the market watch (2010). Rwanda is a country with many good aspirations and has been at the forefront of developing its financial sector and its IT systems that would support e-commerce and e-banking systems that are good aids to achieving a cashless society according to (BNR, 2014), and it has so far achieved good progress as shown in table 1 and Table 2 below. Achievement of a cashless society involves a lot of hard work, heavy capital investment in cashless society enabling infrastructure by the government and financial institutions and setting up of the enabling laws that facilitate its functionality. According to Purewal (2013), in a cashless society, the security of users is vital security of PINs; security from cyber attacks etc and so all players should work hard to win the trust of their customers so as to gain their support. This research aimed at exploring the possibility of whether or not Rwanda can become a cashless society and BNR was used as a case study. BNR is the central bank of Rwanda and it also regulates the banking and general financial industry and hence it was a good source of information for this research.

II. LITERATURE REVIEW

The realization of a cashless society would be aided so much by the financial institutions since there are so many gadgets with applications that can aid financial transactions without physically handling cash as reasoned by Justine (2012). The issue here is that, it is financial institutions that handle lots of cash and therefore it would be handy for them to sensitize their clients and ensure that everything is handled through wire via use of computer technologies. According to market watch (2010), they refer to cash as the king though it is recognized that the cost of having a cash based society is high when you compare it with a cashless society where for example, a customer may not be prone to loosing just in case of lose of a plastic card since it can be

cancelled by the issuer at any instant. If you look at Rwanda, it is majorly cash based society, however, with more development in its telecommunication and information technology infrastructure, cashless society can be achieved and it becomes a reality. However, it can be a bit of a challenge to put a timeframe on this but what is vital is that, with political will and heavy investment in needed infrastructure, it can be achieved much sooner with a likely estimate of the year 2040 for only the banked population and the challenge will be remaining for the unbanked population especially the rural who have no access to financial institutions and the use of bank cards. It should be recognized that with cashless society, the security and privacy of individuals is compromised in payments and there is lots of hackers who engages in criminal activities to still passwords and PINs and other bad acts and this makes going cashless a risky undertaking (Purewal, 2013). So if Rwanda is to go cashless, then it would need some security measures that authenticate all electronic transactions and this should be universally accepted and trusted by partners. Adeoti (2013) did a study in Nigeria about POS and his finding was that their usage significantly encourages e-payments and reduces the burden of cash transactions, and the researcher also commented that fraudsters normally target banks, churches and other settings that are likely to have lots of liquid cash in their possession. In Rwanda, some business installations use point of sale technology though it is mostly accepted by foreigners who understand how it works and they are happy to pay using VISA, Maestro etc, but the locals seem reluctant to adopt it and this could be due to lack of sensitization on the technology and its benefits.

Some futurists believed that a cashless society could become reality by 2015 where the majority of the payments would be done using modern systems of payments like internet, contactless payments and mobile though will depend on the pace of technology developments (Teller Vision, 2006; Carmona, 2009). With very low internet accessibility of 30 percent of the population, realizing complete cashless society might a big challenge for most countries like Rwanda and others in the Sub Saharan Africa though it should be appreciated that majority of the financial institutions use cell phones and the internet for bank transactions and this helps the customers the hustle of branch services which sometimes involves long quos and time wasting (Carmona, 2009; Kupetz, 2007). The acceptance of a cashless society is very vital in fighting organized crimes like drug dealings in economies which in most cases is likely to involve physical cash and this is to say that it vital to ensure that cash can only be accessed through automation aiding law enforcers to check out the wrong doors and apprehend them (Downes, 2004; Franklin, 2005). Rwanda as fast growing economy should set its goal of achieving a cashless society with cognizant that it enhances efficiency in the sector and reduces costs associated handling cash and again it can be a deterrent to law breakers that use hard currency to transact business.

III. IMPORTANCE OF STUDY

A cashless society is safe in terms of handling payments between parties. There could be a challenge however if the security of the transactions done on the computer network is compromised by computer criminals (Tison-Dualan, and Gallegos, 2001). The reality of having a cashless society in Rwanda is a dream comes true for the country like Rwanda which has a strong passion and desire to adopt the use of information technology in its operations. The banking industry in Rwanda is growing steadily and the economy continues to grow, there is therefore need to streamline ways of making banking easy and safe for its customers and therefore, the adoption of use of EFT methods like use of point of sale (POS) for retailers, remote banking for ATM users, and preauthorized payments would be a step in the right direction (Carmona, 2009 and Tison-Dualan, and Gallegos, 2001). Success of a cashless society depends on how savvy the society is and the ability to guarantee the security of customers and in most cases security is not guaranteed and this can create a lot of doubt among the users (Purewal, 2013).

In some countries like Sweden cash cannot be used in some places like on public buses, though one should appreciate that Sweden is an advanced economy and it can afford to do that according as compared to a developing country like Nigeria and other sub-Saharan countries with cash society that comes with a lot of challenges like robberies, and cost of cash management, counterfeiting among others (Adeoti, and Purewal, 2013). In a survey by the marketing News (1987), done by payments systems education association (PSEA) about cashless society which considered 1007 respondents in the United States of America revealed that more than half would prefer to use personal checks when paying for goods and services. This is a significant reflection that some group and class of people may not be ready to let go the love for legal tender and use of checks so as to transact through EFT. If this is a reflection of what happens in advanced country, then, it would be a worse situation in an underdeveloped country which may not even have enough security to transact just on computer interconnections. Rwanda is a developing country with strong aspirations and it is slated to become a strong IT hub in the region according to ICT Rwanda (n.d).

Cashless society may not be easily achieved if a country has poor communication network and worse still if the attitudes of the people are not favoring transacting via remote banking and through other electronic channels. This study has assessed the ability of Rwanda to realize a cashless society owing to the fact of not having enabling laws, reliable internet connections, and threat of hackers and guarantee of security of the users. The findings will come in handy in aiding policy formulation on how the government of Rwanda can achieve a minimal riskless cashless society. Financial and other institutions in the country and elsewhere would be able to learn what to be done to have successful cashless transactions in their societies.

IV. STATEMENT OF THE PROBLEM

The idea of a country achieving a cashless society is a dream come true for any advancing economy. In the study by Purewal (2013), it is argued that having a cashless society is less risky compared to having a “cash use”. Rwanda is considered a cash use society and partly cashless especially where ATMs, POS and direct debits are concerned. Hembree (2012) observed that where as futurists are taking about realization of cashless society, it is happening in different forms for example the use of plastic cards would sooner than later become outdated technology and everything in terms of handling business transactions would then start being handled using mobile gadgets. It is really vital to appreciate that cashless society will be next to impossible to achieve if the country does not have adequate technology to operate it. This study helps to shade light on the possibility of Rwanda achieving a cashless society and this can be achieved sooner than later. National bank of Rwanda has been used in this study and this is because, it regulates all financial matters in the country and therefore it was a good choice for reliable findings.

Research objectives

1. To understand whether or not Rwanda can achieve a status of cashless society
2. To assess the challenges of achieving a cashless society in Rwanda

Hypothesis

1. Rwanda can be a cashless society if it has strong and reliable information and telecommunication infrastructure.
2. It would be difficult for Rwanda to be a cashless society if the relevant laws and security governing electronic funds transfer (EFT) are not in place.

V. RESEARCH METHODOLOGY

This study was about finding out the possibility of realizing a cashless society in Rwanda. The major issue was to understand whether or not the country can achieve this dream since it has commendable strong telecommunication infrastructure in the region and the essence of having governing laws for the cashless society when transitioning from cash based economy. This study was done mostly using secondary data mostly derived from the National bank of Rwanda (BNR) that was used as the case study by the research. The use of secondary data was preferred because of the technical nature of the subject which called for use of actual and verified statistics produced by the bank in its reports and other publications. The study took an exploratory approach and mostly concentrated on the statistics that were produced for the financial year ending June 2012 and for the year ending June 2013. This method of research helps the researcher to discover the facts on the ground about a subject. According to BNR (2013), this is the period the bank acting in its capacity as a regulator of the financial sector realized an explosion of many banks requesting to offer electronic banking services like internet banking, point of sales, mobile banking among other services which are very crucial in the realization of a cashless society. The actual data that was collected for this study was on electronic payments in Rwanda especially on mobile payments, mobile banking, and internet banking. Also data about card payments especially using POS, Automated teller machines, debit and credit cards were collected to help in the analysis of the dream for the country to become a cashless society. It was vital for the researcher to use correlation analysis to find the relationship between the electronic products offered by the banks and the returns there afterwards and then be able to determine if there is a direct relationship that can for example be manifested if say there is an increase in the volume of ATM transaction from one period to another under consideration for this study, would this also be reflected in the increase in value in monetary terms. Analysis of the data was done to find a direct relationship through computing for coefficient correlation using excel worksheet for variables for each bank product and growth trends were critically analyzed. A strong correlation would be observed if the finding between two variables is between -1 and +1. Findings from this study should be reliable and valid because the data used was from the National bank of Rwanda that is the regulating body for all financial institutions in the country.

Therefore, the data used is actual and analysis based on it will be reliable and dependable and it would shed light on how far the country has gone in its stride to move from a cash-based economy to a cashless society.

VI. RESULTS AND DISCUSSION

The findings are based on the analysis of the data based on the bank's report for the period of July 2012-June 2013. The data analyzed was mostly on the usage of POS, use of Automated teller machines dubbed as ATMs, and use of plastic bank cards. Electronic means of conducting financial transactions were also analyzed to ascertain the level of their usage and acceptance. A cashless society can be achieved if financial transactions can be handled without physically handling cash or where financial transactions have to be handled electronically. From Table 1, it was made clear that the number of ATMs has grown from 232 in June 2012 to 323 in June 2013 reflecting a 39 percent increment. This is a good growth trend for the country Rwanda that is aspiring to be a cashless society through use of information technology. Point of sale terminals is very good for the economy that aspires to be cashless for instance when you analyze the figures in Table 1 about POS, it reflects a growth trend of 107 percent by June 2013 from 385 merchants in June 2012. There were no POS agents in 2012, but in the year 2013, they were totaling 390. These are good indications of the willingness of the population to embrace use of technology to do financial transactions and hence achieve a cashless society as opposed to a cash-based economy.

There is an indication of less value being realized and achieved from use of ATMs and POS as shown in Table 1 since a correlation analysis shows that for instance in the year ending June 2012, there were 1,140,583 ATM transactions and the amounts involved were only 64,834 USD and for the year ending June 2013, 3,943,981 ATM transactions were done involving only 181,265 USD and the correlation coefficient is +1 showing that they trend is strongly correlated. This gives you an indication that once you increase one variable the other variable will also increase and this is what will help the country to achieve a cashless society sooner than later. These sums are not huge by any standards though there is a reflection of increase in adoption of ATMs by 54 percent and the value increment by 64 percent which is really commendable. However, it should be realized that the use of ATMs and POS is not cost free and they can become cost effective based on the frequency or their turnover. For a country to realize this dream of a cashless society, electronic transactions should be cost free to the user or the consumer and incentives for electronic form of conducting financial transactions should be effected for example a bank can collaborate with vendors and say for instance that any customer who pays using a debit card or credit card will get a 3 percent discount on the total purchase price. This will make it attractive for use by consumers. The volume of POS in Rwanda by the year ending June 2012 was 12,341 and for June 2013, it was 82,542 reflecting an 85 percent increment and the value in USD was 3,048 and 9,277 for these years respectively showing an increment of 67 percent with a correlation coefficient of +1 which is a reflection of a strong relationship between the volume of POS and the value realization in millions. This means that the more you increase POS in the country, the more they are likely to be used by customers and this would be a big step in the right direction to achieving a cashless society in Rwanda. The transactions realization from the researcher's point of view is that they are still very low for POS meaning that there are still a huge number of people who prefer to use cash than use their cards for doing purchases in shops and this could also be attributed to fear of security of such transaction and compromise of security of their identity.

Table 1: Card payments infrastructure and performance in Rwanda

Period	No. of ATM	No. of POS terminals		No. of Debit cards	Total no. of credit cards	ATM transactions		POS transactions	
		Merchants	Agents			Volume	Value (USD)	Volume	Value (USD)
June-12	232	385		320,565	542	1,140,583	\$64,834	12,341	\$3,048
June-13	323	797	390	440,875	1179	3,943,981	\$181,265	82,542	\$9,277

Source: Researcher and BNR (2014)

Turning to the adoption of mobile payments for the year ending June 2012 and June 2013 as per Table 2 below, they increased tremendously from 968,315 to 2,048,260 subscribers for the period under consideration reflecting

an incremental change of 52 percent, with number of transactions improving from 4,301,744 to 21,052,075 showing a change of 80 percent and the values involved changed from 49,980 to 198,694 USD which is a change by 75 percent for the periods under consideration. This trend shows clearly that people in Rwanda are embracing technology to carry out financial transactions and use of such methods reduces dangers associated with use of hard cash to transact for example when you lose cash, it is gone, but when you lose a bank card, you can get it replaced by the issuer and so the customer is safe guarded.

Analysis of mobile banking in Rwanda for the period under consideration gives a total number of subscribers to have increased from 248,689 to 425,815 for June 2012 and June 2013 respectively. This shows an increment of 42 percent and number of transactions involved changed by 75 percent from 253,392 in 2012 to 1,047,004 for June 2013 as reflected in Table 2. The value however in June 2012 was only 608 USD and this had increased by 95 percent by the year ending June 2013. These are all good reflections that with the right infrastructure and proper sensitization of the people, a cashless society in Rwanda can become a reality. As for the end of June 2013, the number of internet banking subscribers in Rwanda had reached 8,229 having changed by only 24 percent from the previous year, and the number of transactions fell from 36,828 in June 2012 to 9,207 in June 2013 which is 75 drop in usage. There was however a slight improvement in the value realization which improved from 6,767 to 11,180 USD reflecting a change by 39 percent. It is true that subscription to internet banking can go up but number of transactions fall and this mainly due to fear of internet threats like hacking into customers accounts, fear of identity theft and may be lack of enabling law that punishes internet fraudster since they may not be located in Rwanda which then makes it so hard to track them for punishment of the crimes committed.

In analyzing the correlation coefficient of all the three electronic payment systems in Rwanda namely mobile payment, mobile banking and internet banking, the result shows a strong relationship between the number of subscribers and the number of transactions for the years ending June 2012 and year ending June 2013. Their correlation coefficient is 0.959943678. What this reflects is that to be able to move from cash based economy to cashless society, electronic banking products and services by financial institutions have to be increased and the net effect would be increased adoption and usage. Rwanda financial institutions have subscribed done international acquisition payments systems with 10 banks subscribing to Visa, 1 bank for MasterCard, 3 for China Union Pay, 2 for Diners club, 1JCB and 1 for Amex and also all the 3 mobile telecommunication companies in Rwanda are offering mobile payments and eight banks do offer to its customers internet banking and mobile (BNR, 2013). In a view to promote a culture of not using hard cash for making business transactions, Rwanda Visa Ltd has developed its mobile Visa according to BNR (2013) known as mVisa intended to help its customers do banking or financial transactions at even their own leisure and with easy and this would not have been possible if the country had poor telecommunication infrastructure.

Table 2: Data on electronic payments in Rwanda

	No. of Subscribers		No. of transactions		Value (USD)	
	June-12	June-13	June-12	June-13	June-12	June-13
Mobile payment	968,315	2,048,260	4,301,744	21,052,075	\$49,980	\$198,694
Mobile banking	248,689	425,815	253,392	1,047,004	\$608	\$13,380
Internet banking	6,237	8,229	36,828	9,207	\$6,767	\$11,180

Source: Researcher and BNR (2014)

From the analysis of data in the tables 2 above, it is clear that the country has developed and is still developing progressively with electronic banking services like use of ATMs, point of sale, mobile banking, and internet banking among other options that exists in the country, but is clear is that the number of transactions have been on the upward trend for all the products except for internet banking that had its number of transactions go down by 75 percent from 36,828 that were done in June 2012. Looking at the POS transactions value showed an incremental change of 67 percent. The change in the number of each electronic type of banking transactions directly affects the value in monetary terms for each year under consideration for this study. The coefficient correlation computed here for year ending June 2012 and June 2013 is 0.65937777 all the three electronic payment methods under consideration for this study. Again what this means for Rwanda is that accelerate and encourage banks to create and encourage customers to use electronic banking

services since achievement of a cashless society requires a strong corporation with the financial institutions and banks should be linked to easy banking transactions between customers of different financial institutions. Realization of cashless society takes time and it requires capital investment in development of supporting infrastructure like reliable internet supply, good telecommunication systems, enacting of enabling laws, systems to combat internet fraud among others. It is also important to create awareness among the users on the advantages and disadvantages of using electronic means of transacting business so that, they should be taught for example on how to differentiate between a genuine bank site from a fraudulent one that may mimic the real site, to be aware of phishing scams, they should be made aware of who bears the cost of doing electronic banking transactions among others as this would create trust between the customers and the banking institutions. The goodwill of the government is very vital in creation of a cashless society and the best way would be take a phased approach for instance start by elimination of use of cash for example in buses and instead use chip readable cards, later then eliminate use of cash in restaurants and progression is gradually as the economy also keeps developing. Rwanda can achieve a cashless society provided it keeps improving its telecommunication platforms and linking its platforms with other international players in the market. Mass education about cashless society will play a big role in achieving a cashless society even though it can take time but, it is a realistic dream that should be pursued by an ambitious country like Rwanda.

VII. CONCLUSION AND RECOMMENDATIONS

A cashless society is achievable and this can happen well especially when a country takes a phased approach by eliminating its use in some sectors of the economy at once and then later to another one and this approach is taken until a country achieves a dream of having a cashless economy. Rwandan economy can realize this dream provided it takes cognizant of the fact of encouraging its population to become banked through main stream commercial banks and rural banks and cooperatives. It was evident from this research that there is a positive correlation between an increase in one electronic banking service and the number of transactions being carried which also affected positively the returns in monetary value and thus showing a strong relationship. So any investment in one variable by government or financial institution would lead to increase in usage by the other variable. For instance when the volume of POS transactions increased from 12,341 that was fetching only \$3,048 for the year ended June 2012 to 82,542 for the year ended 2013, this led to an increase in value involved of \$9,277. The correlation coefficient generated here of 0.65937777 showed a strong relationship between the variables. Financial institutions should be at the forefront of encouraging installation of electronic means of handling electronic banking transactions in business places such that clearance of bills can be done by use of plastic cards. The regulating body for financial services in Rwanda which is the central bank (BNR) should be keenly looking out for those institutions that would want to abuse the system of cashless society and it should institute tougher penalties for culprits. The advancement of a cashless economy would call for the government to institute tough laws that govern electronic banking services in the country. A huge capital investment in the information and telecommunication infrastructure by the government, financial institutions and other players would be crucial for the success of electronic payments that help facilitate the achievement of cashless economy. The use of ATMs in itself would not lead to a cashless society since it is only an e-banking facility and it still involves handling cash by users and it is just about depositing or withdrawing money through a hall in a wall. A cashless economy should be when cash is not handled at any time by any party and all that can be used for transactions is electronics functions.

VIII. ACKNOWLEDGEMENT

I extend my appreciation to National bank of Rwanda that facilitated me with the required data that enabled completion this Research. I am humbly honored.

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