Influence of Mobile Wallet Adoption on Performance of Tea Farmer's Payment Systems by Cooperatives Kenya

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Abstract

Technology and time have significantly changed. Mobile phones have since changed the world telecommunication industry. Many innovations have led to remarkable economic gains in the last two decades. The incredible gains achieved over the last decade in mobile phone access have led to unexpected innovations. Mobile banking is a crucial factor in ensuring customer satisfaction, reducing operating costs, and a path for banking services penetration to the general public. The increased adoption of mobile banking has led to a new distribution channel for retail banking. The adoption of Internet banking has changed the dimensions of competition by introducing alternative delivery channels, including automated teller machines, mobile phone banking, and personal computer banking. The study's main objective was to determine the influence of mobile Wallet adoption on performance of tea farmer's payment systems by co-operatives Kenya.

1. Introduction

Today the market is highly competitive and the business environment is also volatile due to the digital disruption that has shaken the economy of every sector including the banking sector, which previously had been known to be conservative but has not been spared. Thus, the use of financial technologies has led to new markets and also creation of new business models (Vives, 2017). Technological changes in the financial sector are inevitable. The introduction of internet banking has changed the dimensions of competition by introducing alternative delivery channels including automated teller machines (ATMs), mobile phone banking and personal computer banking (Muiru, 2015). Mobile banking is an example of FinTech solution that is mostly used as a strategic tool by financial institutions for growth. Mobile FinTech has profound effect on lending and payments as major areas. In electronic payment systems, it allows for cashless payments via multiple channels using mobile technologies such as e-wallets, m-wallets, peer to peer payments, and digital currencies (Vives, 2017).

Mobile FinTech provides an automated digital lending platform, where lending decisions are made by computer algorithms. Mobile FinTech is also used for lending from credit valuation to loan payment (Laukkanen, 2017). Although mobile FinTech provide flexible, effective, and convenient ways of providing services with novelty, the major concern is always to deal with data security. Due to new emerging technologies that are not fully tested and validated, building of trust on the FinTech innovative services has been a challenge (Ray, Paul, & Miglani, 2018).

Phones are now "mobile banks" a client is able to transfer funds between bank accounts, check statements, apply for loans, request for statements, make payments, make deposits and withdrawals and even request for check books. Mobile banking is a key driver to ensuring customer satisfaction, reduction of operational costs, and a pathway for penetration of banking services to public (Muiru, 2015)

Mobile money is now available in over 90 countries globally where there are at least $1.3 billion daily transactions. There approximately 163 mobile money companies globally 40 of which are reported in Asia-Pacific, 90 in Africa and 17 in America (GSMA, 2020). Global growth in the mobile sector creates unique opportunities for financial and social services that enable mobile networks with over 4 billion mobile subscriptions to provide mobile banking to more than 61% of the world's population. In Kenya, mobile banking platforms have been rolled out in most banks in a bid to connect clients' bank accounts with mobile players in the country, including Safaricom, Airtel and Telecom. Mobile banking is a beneficial innovation for the bank, employees and clients as the technology is convenient, saves time and money, eliminates errors and reduces transaction costs, thereby increasing customer satisfaction(Kamuti, 2018).

The first cooperative society in Kenya was the Lumbwa Co-operative Society, founded in 1908 by European farmers to buy fertilizers, chemicals, seeds and other agricultural products and then market the produce for savings. In 1930, the Kenya Farmers Association (KFA) was incorporated as a cooperative society to take over the agricultural promotion role played by the Lumbwa Cooperative Society. The aim is to use economies of scale to generate income for agriculture, such as fertilizers, chemicals and seeds, and to ensure that European migrant farmers and their products are sold (Ototo, 2017).

2. Statement of the problem

Most farmers who contribute to private cooperatives are always paid on a certain day once a month as they lack SACCOS to provide long-term and short-term access to loans. Thus, when farmers need emergency or development funds for their livelihood, are not accessible so they look for alternative solutions like farmers government cooperatives or intermediaries to provide cash loans.

Mobile apps can lend money, though most of the time it is never enough and the interests are high. Alternatives such as selling crops to middlemen for cash can sometimes be risky in relation to payment terms and conditions. The usage of smart phones increased to 80% in 2020 globally and mobile banking has helped development of access rates that have influenced the bank perception. Customers have switched to apps, smart phones and even tablets and are highly utilized for shopping, learning and even jobs. Yet during the COVID-19 era on 33% of SACCOS had innovated products to curb the effects of pandemic. SACCOS had 53% in terms of deposit, capital services, and credit while in payment related services they had 20% of products. Thus, most farmers had difficulty is getting their payments on time though the same SACCOS since they prioritized deposit and credit services (Central Bank of Kenya, 2020).

Various studies have been done on mobile banking adoption, integration and uptake locally, regionally and globally. Ndungu & Moturi(2020), Akiyemi & Mushunje (2020), Batista & Vicente (2020), Kabir (2017) and many others. Though these studies provide important literature to this study, none has focused on ICT integration on tea farmer's payment by cooperatives in Kenya, a gap this study seeks to fill.

3. Objective of the study

The main objective of the study is to explore the influence of mobile wallet adoption on performance of tea farmer's payment systems by Cooperatives in, Kenya. The study will contribute the knowledge to the different Cooperatives regarding the utilization of the digital platform and how it can contribute to the maximization of profits in the organizations. The ultimate existence of every financial organization is to grow the shareholders wealth and maximize their profits and this can be done by studying what other financial entities namely banks do in the current market setup. It is an opportunity for the Cooperatives to embrace technology as the customers are technologically advanced through interactions in other advanced industries.

This research will assist the ICT companies that deal with the creation and formation of the different applications that are used in the financial sector to come up with innovations that are affordable. One of the reasons why the different SACCOS do not invest in mobile wallet is because it's very expensive and since technology keeps changing it's a waste of resources to invest in them every time. Moreover, the companies can come up with innovations that are customer based hence there is a ready market for their products. As a result, the microfinance industry in the country and other affiliated firms will derive great benefit from the study.

Academicians and researchers who wish to uptake additional research in this area will greatly contribute to the present study about the influence of mobile wallet on profitability on farmers payment Cooperatives and provide sufficient knowledge that will be a source of reference to other researchers. The study will make it easier for individual researchers to identify gaps in current research and conduct research in these areas, the work will also be used by academics who want to study a similar area.

Policy makers in government and cooperatives will be educated on the influence of ICT integration on wage performance for farmers. It continues to be useful in identifying areas in need of reform and making policies conducive to investment in ICT infrastructure in the country. The findings will also compel the national assembly to pass favorable bills that will enhance the use of ICT as part of the financial deepening strategy which will go hand in hand with the realization of the famous Vision 2030.

4. Literature Review

Mobile wallets are basically digital versions of traditional wallets that someone would carry in their pocket. While there are many variations, they can typically contain digital credit and debit card information to make payments, store coupons and loyalty programs, specific personal identity information, and more (Chase for Business, 2022). The customer can use all their stored information simply by opening the app on their phone, entering a PIN, password or fingerprint and then selecting the information they need to access.

To make purchases, people can pay with their tablet, smart watch, or Smartphone (Scott-Briggs, 2016). It can also be described as a payment service through which individuals and businesses can send and receive money through mobile device. It is a type of e-commerce mode that is intended to be used with mobile devices owing to their easy access and convenience. It is also known as a mobile money transfer or mobile money. Mobile wallet technology allows an individual to receive payments as well as pay for goods and services using a mobile device, its payment process model contains Mobile-based billing which entails an individual generally receive/sends payment through their mobile service provider, SMS-based transactions that involves initiating transactions by sending an SMS short code (Scott-Briggs, 2016).

The terms "mobile banking" and "mobile money" are used as synonyms (Kamuti, 2018; Mbiti & Weil, 2011).

Mobile banking is the access to banking services and other facilities provided by financial institutions, such as payment transactions, account-based savings and money transfers, via mobile devices (Kamuti, 2018). FinTech companies have broadened beyond payments into core banking areas like offering credit. Conventional banks are thus forced to compete with the FinTech companies in providing exceptional customer experience and also in meeting the customer expectations. FSD Kenya reports that 35% of phone owners in Kenya have attempted to borrow from digital lenders while 37% of them obtain business loans and 35% for their daily needs. Though, mobile money transfer has proved to be a success through network operators due to its low barrier adoption and convenience there is still an opportunity for all the industry players to have a comprehensive integrated payment solution (Deloitte, 2019).

The payment can be debited/credited from the configured bank account, mobile service or credit card, Mobile web payments which enable users to receive/send payments through a mobile app and Near-field communications (NFC) which means a special hardware in the mobile device and a mobile app relate with a payment-processing terminal (Saxena, 2019). 'Example of a mobile wallet is PayPal, M-PESA, Airtel Money and Orange Money just to mention a few. Mobile Wallet variables entails user registration, user authorization and user profile which means ability to access one's data anywhere and anytime they need it'.

5. Research Methodology

A descriptive survey design was adopted in this study. The research focused on five private tea cooperatives in Kenya: Evergreen Tea Factory, Mau Tea Factory, Kaisugu Tea Factory, Kabianga Tea Factory, and Kap Chebet Tea Factory. The study used 158 top & middle management tea factories in Kericho County, Kenya, that contribute tea to the five privately owned cooperatives to get the necessary information. A sample of 113 respondents was drawn from the population. Both descriptive and inferential statistics were done. A pilot study was conducted on 10% of the sample, where 11 questionnaires were administered to respondents that were not used in the main study. The questionnaire was checked for validity and reliability. Table 3.1 below shows the population.

Table 5.1 Target Population

TEA COOPERATIVES	Population
Evergreen Tea Factory	23
Mau Tea Factory	39
Kaisugu Tea Factory	31
Kabianga Tea Factory	32
KapChebet Tea Factory	33
Total	**161**

Source: Tea farmers Sacco data (2022)

This study was guided by Yamane's method of 1967 where, the sample was calculated as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Where, N is the total Population,
e is the error term which is usually 5%
Therefore, the sample population can be obtained by;

$$n = \frac{158}{1 + 158(0.05)^2}$$

n= 113top and middle management of the 5 tea factories.

5.1 Sampling Technique

The study used purposive and simple random sampling techniques. The study purposively selected respondents from the major tea companies based on the age bracket. Purposive sampling techniques rely on researcher's judgment when choosing members to participate in the study **(Sekeran & Bougie, 2010).** Simple random sampling was used where the respondents are homogenous. The below sampling frame was used.

Table 5.2 Sampling Frame

TEA COOPERATIVES	Population	n
Evergreen Tea Factory	23	16
Mau Tea Factory	39	28
Kaisugu Tea Factory	31	22
Kabianga Tea Factory	32	23
Kap Chebet Tea Factory	33	24
Total	**158**	**113**

5.2 Data Collection

Primary data was collected by presenting respondents with open and closed questionnaire. The questionnaire provides a high level of data standardization and adoption of common information in each population group. They are useful for descriptive studies that need to get information from people quickly and easily in a threat-free manner According to Cherry (2015) questionnaires are used to test and obtain responses from respondents and to collect all the data elements needed to test hypotheses and other tests related to various research topics. A letter of data collection approval was obtained from both Jomo Kenyatta University of Agriculture and Technology, and the National Committee for Science and Technology Innovation (NACOSTI). The Questionnaire was drop-and-pick managed and was self-managed to reduce interviewer bias. When creating survey items, the closed-ended and open-ended formats of the items were used.

The completed questionnaires were checked for completeness and consistency to ensure that all questions were answered and also for any false or inconsistent information. The collected data were edited to eliminate errors and omissions in order to ensure accuracy, completeness and clarity. The collected data was then tabulated and coded. Analysis of the questionnaire used descriptive statistics of frequencies, means and percentages.

6. Results/ findings

Out of the 113 questionnaires distributed, 91 were returned giving a response rate of 80.53% which is excellent as opined by Mugenda and Mugenda (2018).This implies that the response rate in this research is good for making conclusions as well as recommendations

6.1 Background Information of respondents

The background information in this research entailed the gender, age bracket, level of academic qualification, number of years in service. The demographic information was presented in tables and figures.

6.1.1 Gender

The respondents were requested to state their gender. The results were as shown in Figure 6.1.

Figure 6.3 Gender of Respondents

Respondents Gender

Female 27%

Male 73%
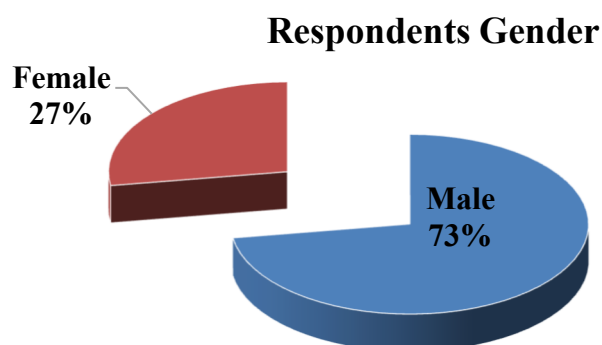
From the results, 72.5% of the respondents were male while 27.5% of the respondents were female. This implies that most of the respondents were males.

6.1.2. Age

Respondents were asked about their age brackets. This was useful in understanding the age characteristics of tea farmers as understand whether the age of the tea farmers will have an effect on the responses given. From Table 4.2 below, all the respondents were matured enough to give reliable responses. Majority of the tea farmers are 36 years above (81.2%).

Table 6.1 Respondents Age

		Frequency	Percent	Valid Percent	Cumulative Percent
	Below 25 yrs	0	0	0	0
	26 - 35yrs	17	18.6	18.68	18.68
Valid	36 - 45 yrs	31	34.0	34.07	52.75
	46 and above	43	47.2	47.25	100.0
	Total	**91**	**100.0**	**100.0**	

6.1.3 Level of Education

The respondents were requested to indicate their highest level of education. The results were as depicted in Figure 6.2, all the respondents had basic education though 2.2% only attained primary. This may affect the trend of

adoption of technology in payment of Tea farmers. However, majority 84.6% had attended college and university and we assume that adoption of technology will not be difficult to them.
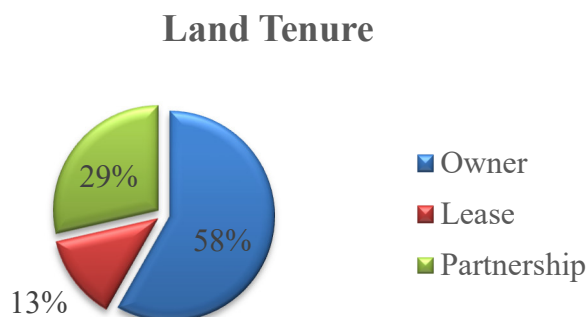
Figure 6.4 Highest Level of Education

Highest Level of Education
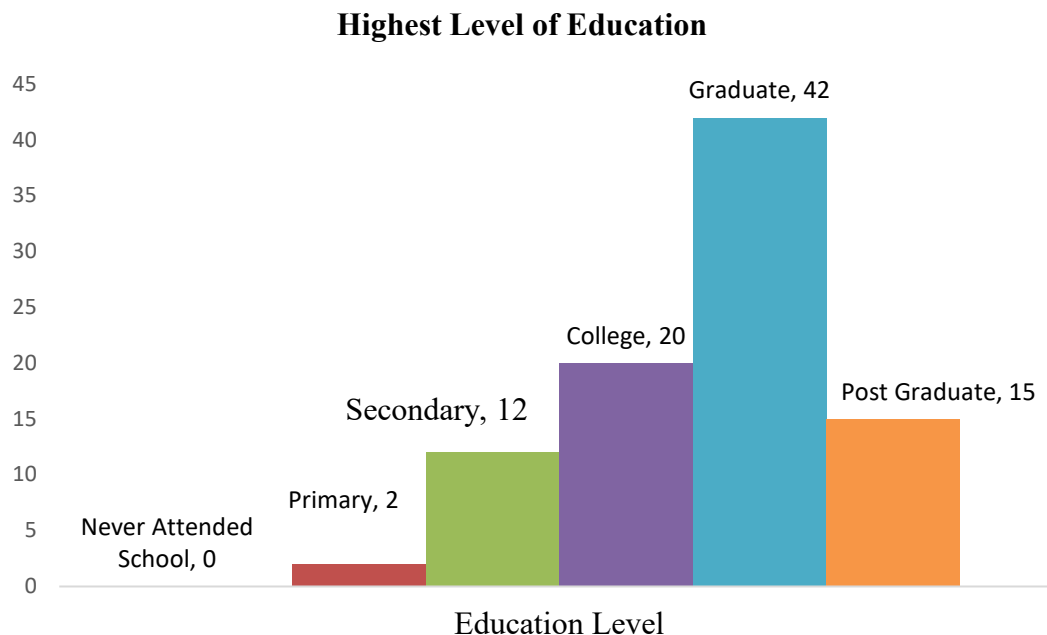
6.1.4 Land Tenure Status

The respondents were asked about the status of the land used for tea farming. Majority of the tea farmers were owners, with16 % being in partnership and a few have leased. Figure 6.3 below shows the results.

Figure 6.5: Land Tenure Status

Land Tenure

6.2 Descriptive Statistics

The section attempts to establish the influence of mobile wallet adoption on performance of tea farmer's payment systems cooperatives in Kenya. The responses from the questionnaires were coded as per the Likert scale and later interpreted in ranges. The ranges for the mean was interpreted as follows: Strongly Disagree (1-1.8), Disagree (1.9- 2.6), Neutral (2.7-3.4), Agree (3.5-4.2), and Strongly Agree (4.3- 5). The results were presented in tables and analyzed.

Table 6.2 Mobile Wallet Adoption

Mobile Wallet Adoption	Mean	Std dev
Money can be wired from the co-operatives account to members' mobile money wallet.	3.53	1.328
Payment systems have been integrated with members' mobile phones to facilitate money transfer.	3.54	1.352
Mobile devices have facilitated reduction in the time it takes members to make a deposit and withdrawals.	3.52	1.205
Credit ratings of the members can be performed over a mobile device.	3.52	1.233
In the case of theft, it will be impossible for anyone to use the mobile device to make a payment without providing the required security credentials	3.46	1.344
M-pesa as a mobile wallet has transformed the way tea farmers transact with banks	4.46	1.314
Mobile wallets are also quickly accessible and convenient, making it easier for users to make payments	3.57	1.292
Composite Mean	**3.66**	**1.295**

The findings revealed that money can be wired from the co-operatives account to members' mobile money wallet. This shown by the mean of 3.53 (std dev =1.328). Further, payment systems have been integrated with members' mobile phones to facilitate money transfer. Payment can be debited/credited from the configured bank account, mobile service or credit card, Mobile web payments which enable users to receive/send payments through a mobile app and Near-field communications (NFC) which means a special hardware in the mobile device and a mobile app relate with a payment-processing terminal(Saxena, 2019). This is shown by the mean of 3.54 (std dev =1.352).

Respondents also agreed that mobile devices have facilitated reduction in the time it takes members to make a deposit and withdrawals. This sis shown by the mean of 3.52 (std dev = 1.205).

Further, members agreed that credit ratings of the members can be performed over a mobile device. As supported by the mean of 3.52(std dev =1.233). However, respondents slightly agreed that in case of theft, it is impossible for anyone to use the mobile device to make a payment without providing the required security credentials. This is supported by the mean of 3.46 (std dev = 1.344). The mobile wallet applications in the phones are secured by a PIN, password or fingerprint (Chase for Business, 2022).

Respondents agreed that M-pesa as a mobile wallet has transformed the way tea farmers transact with banks. This evident from the mean of 4.46(std dev =1.314). Finally, respondents agreed that Mobile wallets are quickly accessible and convenient, making it easier for users to make payments. This shown by the mean of 3.57 (std dev =1.292). To make purchases, people can pay with their tablet, smart watch, or Smartphone (Scott-Briggs, 2016). Mobile Wallet variables entail user registration, user authorization and user profile which means ability to access one's data anywhere and anytime they need it (Saxena, 2019).

The Composite Mean of 3.66 (std dev =1.295) suggest a positive Mobile Wallet adoption in tea farmers payment systems by cooperatives. The findings show that respondents agreed that there is mobile wallet adoption by tea farmers in their payment by cooperatives. Mobile wallet technology allows an individual to receive payments as well as pay for goods and services using a mobile device, its payment process model contains Mobile-based billing which entails an individual generally receive/sends payment through their mobile service provider, SMS-based transactions that involves initiating transactions by sending an SMS short code (Scott-Briggs, 2016).

7.   Summary, conclusion and Recommendations

The objective was to explore the influence of mobile wallet adoption on performance of tea farmers' payment systems by Cooperatives in Kenya. The descriptive statistics suggested the adoption of Mobile Wallet by cooperative to enhance performance of tear farmers' payment systems. The study found that, money could be wired from the co-operatives account to members' mobile money wallet. Payment systems have been integrated with members' mobile phones to facilitate money transfer. Mobile devices have facilitated reduction in the time taken by members to make a deposit and withdrawals .Further, credit ratings of the members can be performed over a mobile device .However, it was not clear whether in case of theft, it is impossible for anyone to use the mobile device to make a payment without providing the required security credentials. M-pesa as a mobile wallet was found to have transformed the way tea farmers transact with banks. Finally, Mobile wallets are quickly accessible and convenient, making it easier for users to make payments. From the inferential analysis, Mobile Wallet Adoption was found to have a positive significant correlation with Performance of Tea Farmers Payment systems by Cooperatives. The relationship was found to be

The study concludes that mobile wallet adoption significantly influences performance of tea farmer's payment systems by Cooperatives in Kenya. Money can be easily wired from the co-operatives account to members' mobile money wallet. The Integration of Payment systems with members' mobile phones has facilitated easy money transfer. Mobile devices have facilitated reduction in the time taken by members to make a deposit

and withdrawals.

The study general recommends fully integration of ICT by cooperatives to ensure enhance performance of payment systems by cooperatives in Kenya. Adoption of mobile wallet should be embraced as part of ICT integration by cooperatives in Kenya. The study also recommends enhancement of security features to reduce the worry of theft and fraud. Farmers should continue to embrace mobile wallets to make transfer and payment easy.

This study focused on ICT integration on performance of tea farmer's payment by cooperatives in Kenya. Having been limited to Tea farmers cooperatives in Kericho County hence the study findings can be applied to other 19 counties that major in tea farming such as Kiambu, Narok, Nyeri to name but a few both public and private institutions in Kenya. The study therefore suggests further studies on the integration of ICT on the performance of tea farmers' payment system by cooperatives in Kenya

Further, the study found that objective could only explain 49.8% of performance of tea farmers payment by cooperatives in Kericho county. This study therefore suggests research on other factors relating to ICT integration that will help explain the variation of performance of tea farmer's payment systems by cooperatives in Kenya.

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