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Transaction Costs of Safaricom Mobile Phone Banking System and the Efficiency of Bill Payment in Kisii County

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***Abstract*— Over several years, banking services using mobile phones have been available in developing as well as developed countries. However, it has been noted that there is still a big population who are registered with M-Pesa, but are not using the system to make their bill payments despite the attention that M-Pesa has received. The purpose of this study was to establish whether transaction costs of the Safaricom mobile phone banking system influenced the efficiency of bill payment in Kisii County. The study units were individual Safaricom customers using the M-Pesa platform and individual M-Pesa vendors. Purposive sampling was used to select 272 M-Pesa customers and vendors. Both primary and secondary data was obtained for this study. The results from the study indicated that the respondents in the study area perceive the M-Pesa system of bill payment as cost effective. In particular, respondents tended to agree that it's cheaper making payment of bills through the use of M-Pesa than other modes, and that transactions through the system saves money that would be used as transport to go directly to recipients and make payment. Besides time is saved as people do not have to wait on queues to make payments. The M-Pesa bill payment system attracts low costs. The study also established that the system reduces the danger posed in handling money in cash to go and make payments. The study thus revealed that the M-Pesa bill payment transaction cost has a negative influence on customer's efficiency in bill payment.**

***Index Terms*— M-Pesa, payment, money, transaction, customer.**

I. INTRODUCTION

Highlight Banking services using mobile phones, referred in this research as M-banking, have been available in developing as well as developed countries for several years, but it is not until recently new modalities of applying M-banking have started to diffuse rapidly to previously unbanked people (Bangens and Soderberg, 2008). The effectiveness and cost control of expanding outreach of banking services has always been challenging for financial institutions (Sohel et al., 2011). The combination of widespread cellular communication and the ability to transfer money instantly, securely, and inexpensively are together leading to enormous changes in the organization of economic activity, family relations, and risk management and mitigation, among other things (Mbiti and Weil, 2011).

A study by Shevlin et al., (2011) in the US revealed that mobile banking gives consumers the ability to avoid accidentally overdrawing on their accounts. Sohel et al., (2011) noted that almost all the residents of Bangladesh have cellular phones and that this has enabled mobile phone clients to text their loan payment directly to the bank, saving them both travel time and money. According to Pegueros (2012) some of the transactional services of mobile banking included account transfers, bill pay, person to person payments and remote deposit capture.

In India, Nandhi (2012)'s study observed that the EKO's mobile money serves as phone cum savings account, thus ebabling people without a formal bank account to engage in safer and more efficient savings mechanisms. In Kenya, USAID (2011) indicated that the use of mobile payment benefits users in the form of cost savings, efficiency, fraud and error reduction, client security and convenience. Porteous (2006) further indicated that mobile banking offers the prospect of increasing efficiency of the payments system; and potentially, expanding access to financial services. However, the study warned that these objectives may be in tension with existing approaches which target other objectives, such as financial integrity of customer protection.

Several mobile payment trend studies have disclosed the potential of mobile network technologies for payment purposes. The M-Pesa service enables subscribers to use their mobile phones to carry out transactions such as pay for goods and services, pay bills. Although the bill payment through M-Pesa was designed to enable users to offset their bills conveniently, fast and effectively at a cheaper transaction cost compared with the other modes of bills payment, it has been noted that there is still a big population who are registered with M-Pesa, but are not using it to make their bill payments. It has also been noted that despite all the attention M-Pesa has received, there is little quantitative evidence on its economic and social impacts (Mbiti and Weil, 2011). There is little research that has been done since its inception to determine its impact not only to the customers but also to the business owners in settling payments. Therefore, it is in view of this that the study seeks to establish the effects of using of Safaricom Mobile phone banking system on bill payment on Safaricom customers. The main objective of the study was to determine the effect of transaction cost of the safaricom mobile phone banking system and the efficiency of bill payment in Kisii County. The study covered Safaricom subscribers who use the system in settling various bills.

A. Research Hypothesis

H_o There is no influence of the M-Pesa bill payment transaction cost on customer's efficiency in paying of bills.

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II. LITERATURE REVIEW

A. *Transaction Cost and Efficiency in Bill payment*

Transaction cost is a key indicator in decisions to adopt new technology. Studies suggest that the cost of a payment transaction has a direct effect on consumer adoption if the cost is passed to consumers. Fenech (2002) in a study on consumer intention to wireless application protocol (WAP) shopping found out the strongest characteristic differentiating the high and the low intention groups was price consciousness. As shoppers in electronic channels are attentive to price the transaction costs of mobile payments should be low enough to make the total cost of the purchase competitive with the physical world prices. Mallat (2006) established that some interviewees had refrained from using mobile payments because of premium pricing. If there is a cash payment alternative for mobile payment in vending machines, for example, the item paid for with a mobile cost commonly more than the same item paid for by with cash. Interviewees were very critical towards the premium pricing and it clearly discouraged them from using mobile payments. A positive aspect of mobile phone is that mobile networks are available in remote areas at a low cost.

With the emerging wave of information driven economy, the banking industry in Kenya has inevitably found itself unable to resist technological indulgence (OkiroamdNdungu, 2013). This has led to a boom in development of mobile banking laying down a strong base for low cost banking, and growth of mobile phone in rural Kenya. The primary function of M-Pesa, at least as it was conceived, is to reduce the costs of making remittances from one individual to another, especially across large distances (Jack and Suri, 2010). The study by Jack and Suri (2010) investigated the economics of M-Pesa and found out that the low cost, and the widespread unmet demand for financial services means that mobile banking has the potential to reach remote corners of the socio-economic, as well as geographic, spectrum.

Omwansa (2009) investigated the progress and prospects of M-Pesa and concluded that M-transactions have succeeded in Kenya due to the impressive adoption of mobile phones, the need to access financial services, and the low cost of M-transfers. Mallat (2006) supports this and adds that the cost of transaction has direct influence to the consumer if it is passed to them. Transaction costs should be low if the transactions are to remain competitive.

For bulk payments, organizations have to hire an armored vehicle and security staff to transport the cash to its intended location and have additional staff on hand at the other end to supervise its distribution to recipients. In such scenarios, the organization incurs a number of costs and security challenges, including vehicle hire, high fuel costs, the cost of sending staff members out (including opportunity costs of having them away from the office), and the cost of extra staff when needed (USAID, 2011). Therefore, the M-Pesa bill payment is a cheaper alternative to the other modes of payment like standing orders that charge a fee or commission for paying one's bills. Besides, there is little or no cost incurred as a person does not have to travel physically to a company or business office to pay a bill.

B. *Measures of Efficiency*

CPSS (2012) identify the following as measures of efficiency: reduced use of cash or cheques, lower processing costs, speeding-up of processing, overcoming infrastructural lags, inclusion of unbanked or underbanked, government payments, fostering competition, improved convenience. Therefore, this study adopted the above measures in order to measure efficiency of Safaricom M-Pesa bill payment system.

III. METHODOLOGY

A. *Research Design*

The study adopted a descriptive survey research design. The study was conducted in Kisii County. The County was selected for the study due to the fact that it has high population which constitutes people from different parts of the country. Kisii County is also one of the Counties in Kenya with the highest number of Safaricom subscribers. The county also has many M-Pesa agents (even in remote towns) who assist the subscribers in depositing money in their mobile phone accounts. Further still, the County is well covered with Safaricom network hence clients do not face difficulty in carrying out their transactions due to unavailability of network. Besides, the Safaricom subscribers within the County constitutes people of different social, academic and economic caliber. The population is socially diversified in the sense that it has people who spend modestly and those who spend extravagantly. From the academic perspective, the County consists of not only the highly learned but also those with middle and low levels of education. As far as economic aspect is concerned, the County has high income earners and the low income earners. This diversity in itself provided a good heterogeneous population for study.

This research study targeted accessing information from all the Safaricom M-Pesa subscribers in Kisii County. KisiiCounty has an estimated population of 507,005 Safaricom M-Pesa subscribers. The figure is estimated from the fact that Safaricom enjoys 80% market share of the total mobile phone subscribers. The study collected primary data from the 384 respondents using structured questionnaires. Open-ended questions were provided in situations where the researcher would not have adequate constraining factors. Data were analyzed using descriptive and inferential type of statistics.

IV. FINDINGS

A. *Response Rate*

Out of the 272 questionnaires that were administered to Safaricom customers drawn from Kisiii County, 230 questionnaires were returned to fully returned and analyzed representing 84.2% response rate. This was considered sufficient for analysis and from which to draw conclusions upon.

B. *Demographic Characteristics of Respondents*

The gender distribution of respondents is presented in

figure 1. It is evident that majority (62.1%) of the total customers were males than females who represented only 37.9% of the total customers included in the survey. This could probably reveal that male customers use the M-Pesa bill payment system more in making their payments. The study further revealed that most of the respondents (34.4%) appeared to have certificate or diploma level of education; 32.6% of the respondents had secondary level of education while only 7.9% of the respondents had an education level of up to postgraduate. The study went further to articulate that 55.1% of the respondents belonged in the age bracket 31-50 years (figure 3); 33% were less than 30 years old while only 11.9% of the respondents were over 50 years.

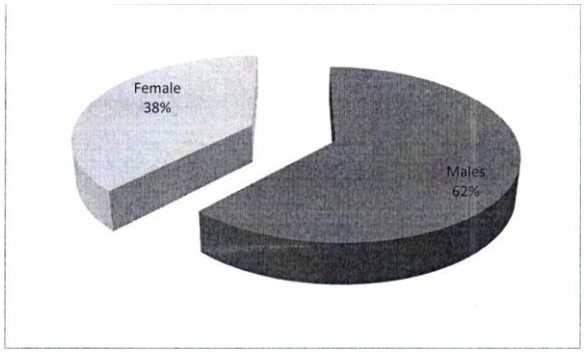

Figure 1: Summary of Gender of Respondents

C. Perceived Level of M-Pesa Transaction Cost among Kisii County Safaricom Customers

The main objective of the study was to determine the effect of transaction cost of the safaricom mobile phone banking system and the efficiency of bill payment in Kisii County. In this regard, six items were used to measure respondents' perceptions of the transaction cost involved in paying bills using the M-Pesa platform. Respondents were asked to indicate the extent of agreement or disagreement with the six items. The results in table 1 revealed that that on the overall the respondents in the study perceive the M-Pesapaybill system as cost effective. In particular, the respondents tended to agree that, they find it cheaper sending money through M-Pesa than other modes (M=4.33, SD=0.489); that sending money via M-Pesa saves money that would have been spent on transpost to the bank (M=3.97, SD=0.616); that the M-Pesa system saves time that would have been spent on queues (M=4.06, SD=0.847); that pay bill number when used attracts minimal costs (M=3.97, SD=0.862); that the system reduces danger posted in handling cash money (M=3.73, SD=0.760); and that the system makes it convenient to bank and withdraw money from their bank accounts (M=3.78, SD=0.724). These results show high level of agreement among customers in the study area regarding the relevance of M-Pesa system in minimizing costs that would have been spent while using other forms of financial transactions while paying bills. The standard deviation values associated with all the items were rather small. This shows that there was consistency in the given responses.

Table 1. Perceived levels of M-Pesa transaction cost among Safaricom customers in Kisii County

Transaction cost variables	Mean	Std. Deviation
I find it cheaper to send money through M-Pesa than other modes of payment	4.33	.489
M-Pesa services save me time taken on queues to make payments	4.06	.847
Sending money by M-Pesa saves me the money I would have used as transport to go and make transactions physically	3.97	.616
I incur minimal costs while paying bills using a registered pay bill number	3.97	.862
M-Pesa provides me convenience since I can transfer money at any time from my bank account	3.78	.724
The M-Pesa system reduces the danger posed by handling cash money	3.73	.760

D. Efficiency of Safaricom Customers in Payment of Bills

Efficiency of Safaricom customers in payment of bills was conceptualized as the dependent variable in the present study. Analysis of prevailing level of efficiency in the payment of bills in the study area was assessed from two perspectives. First, the study sought to identify bills that customers pay using the paybill system. Secondly, the study examined the levels of efficiency using identified indicators of efficiency.

Bills paid using the M-Pesa Pay Bill System: Bills paid using M-Pesa bill payment system were assessed and ranked According to the mean response scores of the respondents. Results of this assessment are shown in table 2.

Results show that seven major services are paid for using the M-Pesa bill payment system among the Safaricomcustomers in the country. Ranked first among these services is payment of goods purchased (M=4.21, SD=0.651); this is followed by payment of electricity bills (M=4.12, SD=0.587); payment of water bills (M=4.12, SD=0.637); payment of NSSF contributions (M=4.00, SD=0.431); payment of other services (M=3.99, SD=0.404); payment of insurance premiums (3.93 SD=0.451); payment of NHIF contributions (M=3.79, SD=0.663); and payment of school fees (M=3.72, SD=0.56) in that order. These results imply that the Mpsea bill payment system has been embraced by Safaricom customers in the country. Key services whose bills are paid through this system are goods purchased mainly from supermarkets and payment of electricity and water bills.

Table 2. Bills paid using M-pesa bill payment system ranked by order of preference

Rank	Bill Paid	Mean	Std. Deviation
1	Payment for goods purchased	4.21	.651
2	Payment of electricity bills	4.12	.587
3	Payment of water bills	4.12	.637
4	Payment of NSSF contributions	4.00	.431
5	Payment for other services	3.99	.404
6	Payment of insurance premiums	3.93	.451
7	Payment of NHIF contributions	3.79	.663
8	Payment of school fees	3.72	.560

Respondents' Perceived Efficiency in Payment of Bills:

To ascertain the respondents' perceived efficiency, eight indicators were used. Respondents were asked to indicate the extent to which they have complied with selected aspects of efficiency in payment of bills. Responses were elicited on a five point likert scale. The results are presented in table 3. The results reveal that Safaricom customers in Kisii County perceive themselves highly with regards to efficiency in paying their bills. They reported high extents in among others, maximizing potential returns in terms of time and money saved (M=4.37, SD=0.518), improvement in bill payment completion time (M=4.30, SD=0.505); making several bill payments on any day (M=4.23, SD=0.533); paying bills promptly (M=4.16, SD=3.93); increasing the frequency of bill payment (M=4.16, SD=0.385); and having high bill payment completion rate (M=4.04, SD=0.403). These results clearly show that Safaicom customers in the study area have benefited in terms of bill payment as a result of the M-Pesa bill payment system. They have seen reduction in the service disconnections as a result of non-payment of bills. In addition, they have seen their frequency of bill payment go up leading to increased bill payment completion rate.

Table 3. Perceived levels of efficiency among Safaricom Customers in bill payment

	Mean	Std. Deviation
I have maximized potential returns in terms of time and money saved	4.37	.518
My bill payment completion time is improved	4.30	.505
I make several payments of my bills on any day	4.23	.533
I have always paid my bills promptly	4.16	.393
My frequency of bill payment has gone up	4.10	.473
I have a high bill payment completion rate	4.04	.403
I do not suffer any service disconnection due to non-payment of bills	3.79	.663

E. Testing the Effect of M-Pesa Bill Payment Transaction Cost on Efficiency in Payment of Bills among Safaricom Customers in Kisii County

The research hypothesis H_o postulated lack of influence of M-PesaS bill payment transaction cost on customer's efficiency in paying their bills. The results in table 4 showed that the standardized coefficient for the transaction cost was highly significant (fl = — 0.235). For this reason, the hypothesis that transaction cost has no influence on customer efficiency in payment of bills was therefore rejected.

Table 4. Coefficients of regression

Coefficients'

Model	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig	Tolerance	VIF
(Constant)	3.227	.200		16.149	.000		
Service Security	.077	.037	.181	2.074	.039	.521	1.920

Dependent Variable: Efficiency of Bill payment

F. Discussion of Findings

The results of the study found statistical significant relationship between M-Pesa bill payment transaction cost and customer efficiency in paying their bills. The decision to investigate the effect of M-Pesa bill payment transaction cost on customer efficiency in bill payment in the present study was informed by the continued trend to examine transaction costs and ability to adopt the mobile platform. In one comprehensive review of low cost and remote transactions, USAID (2011) found that M-Pesa had demonstrated the importance of building low cost transactional platform that enables customer to meet a broad range of their payment needs. The study finds that customers agree with the relevance of the M-Pesa bill payment system in minimizing costs that could have been spent while using other forms of financial transaction needs to support findings of other studies. Omwansa (2009) found that M-Pesatransactions have succeeded in Kenya due to impressive adoption of mobile phones, and more importantly, the low cost associated with M-Pesa transfers.

G. Summary

The study found out that transaction costs have an effect on the customer efficiency in payment of bills. It is evident that M-Pesa bill payment system has reduced transaction costs for customers. This was the case where a customer was to use another mode of paying a bill such as cheques and standing orders.

V. Conclusion

The most important finding of the study is the empirical evidence about the existence of statistically significant relationship between M-Pesa bill transaction costs and customers efficiency in payment of bills. It was also concluded that M-Pesa bill payment cost is central to the proportion of people using the Safaricom platform in paying their bills.

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