

Individual Attributes and the Adoption of Cross-Network Mobile Money Transfer Service by SMEs in Murang'a Municipality

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Abstract

Kenya introduced a platform-level cross-network mobile money transfer service in the year 2018, a move that made the country join other East African countries namely Rwanda and Tanzania in operating interoperable systems. The implementation of cross-network mobile money transfer service was meant to increase access to finance by the unbanked population and reduce Safaricom M-Pesa dominance in the country. However, data shows that the adoption rate is still low in the country. This study sought to assess individual attributes affecting the adoption of cross-network mobile money transfer service by SMEs in Murang'a municipality. Specifically, the study assessed how perceived usefulness, user awareness, user attitude, and perceived ease of use influence the adoption of cross-network mobile money transfer services. Primary data was obtained through questionnaires from a sample size of 250 participants using purposeful sampling design. The analysis of data was done by the use of descriptive and inferential statistics. The study found out that the adoption rate of cross-network mobile money transfer service was very low as only 36% of the respondents had adopted and used the service and the other 64% had not adopted the service mostly because of unawareness and lack of interoperability at the agent level. Based on the above findings; the study recommends that the policymakers ensure they create more awareness about the existence of the service and expand interoperability by having it at the agency level.

Keywords: *Perceived usefulness, user awareness, Agent interoperability, SMEs, mobile money*

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I. Introduction

The SME sector is rapidly expanding because traders have continuously adopted mobile financial services due to the accessibility of selected bank processes and facilities through mobile phones. The mobile money sector has also seen increased growth because it has improved its infrastructure by adding more features that were only possible through commercial banks or agency banking (Söderberg & Bångens, 2011).

Kenya has four main mobile network operators namely Safaricom, Airtel, Telecom Kenya, and Equitel (Finserve Africa Limited) which offer mobile money services to their subscribers through their official names that are Equitel (Equitel), M-Pesa (Safaricom), Airtel Money (Airtel), and T-Kash for Telecom Kenya (Chepnetich & Kimencu 2018).

Safaricom M-Pesa has dominated the supply of Mobile money products in Kenya since its inception in the year 2007. This has led to increased calls of the regulators to introduce interoperability to ensure a fairground for other players in the market (Jack & Suri 2011).

Regulatory challenges exist in mobile money transactions and this is likely to prevent the realization of anticipated advantages. The paramount regulatory issue meant to address competition in the mobile money sector is making it possible for subscribers of different networks to transact directly with one another (Argent, Hanson & Gomez 2013).

To ensure there is a successful implementation of mobile money services, the agent network needs to be very well established. There is a need to employ agents with relevant skills and experience to assist in expanding the network and identifying potential risks. Currently, interoperability between mobile money platforms is functional; however, it compels one to complete the transaction by going to withdraw the cash from an agent of the operator they are subscribers. This confirms that agents have the potential of building trust and credibility or destroying the same (Cobert, Helms & Parker 2012).

Sharing of agents among mobile money providers is likely to face difficulties because of liability brought about by misconduct or fraud. This is because all the parties involved in a transaction will be engaged in

the supervision of the agents. There is a necessity for the introduction of guidelines and a dispute resolution mechanism (Andiva, 2015).

The regulatory environment plays a key role in the adoption of mobile money transfer facilities in a given country. The mobile network operator-led model, which is used in Kenya, has resulted in a higher rate of adoption of mobile money facilities in the country over the years (Suarez, 2016).

Lack of cross-network systems has resulted in network effects a situation in which clients subscribe to the network being used by many of their colleagues and friends to control costs. The interoperability of the networks is expected to address this issue by reducing overreliance on one major network operator in the market. This reduction will, however, take place if the fees for cross-network mobile money transfer on the interoperable system will be favorable to customers. The policymakers and the regulators need to establish and work on the potential gaps and possible overlaps between their existing legislative and regulatory frameworks (Bourreau & Valletti, 2015).

The adoption of cross-network mobile money transfer services just like other products of mobile money is likely to be influenced by individual factors such as perceived ease of use (PEOU), user attitude, user awareness, and perceived usefulness (PU). According to Davis (1989), PEOU is the magnitude to which a person thinks that the use of a certain system will not be complicated by avoiding putting a lot of effort into its usage. This can be achieved by making the registration process and payment procedure as easy as possible.

According to Luarn & Lin (2005), learning and subsequent use of M-payments must be very easy to attract a high usage rate; clients need to have access to mobile phones with the latest technologies and software packages. Most studies have inferred that PEOU is a major determinant of customer's behavioral intentions to accept the usage of a given invention (Okadapau, 2016). Perceived Usefulness is the extent to which a person believes using a particular system will improve their results. Concerning the usage of mobile cash service, PU in a broader context is seen as a way in which consumers believe mobile services can form part of their daily transactions in all aspects by making their businesses more profitable (Dickinger, Arami & Meyer, 2008).

From the mobile payment, perspective, perceived usefulness can be defined as the extent to which the consumer believes that the Mobile Money transfer will improve their daily electronic transactions. PU has been validated by many studies as a major driver for a consumer's willingness to use mobile money services (Chen, Li & Li, 2008).

The degree to which a client finds the mobile cash transfer mode of payment useful may also depend on the Relative advantage (RA) of the service because the ultimate reason why people exploit Mobile Money transfer is that they find them useful (Luarn, & Lin, 2005)

According to Carol (2012), the initial point of introducing a new product in the market is building user awareness by releasing advertisements targeting potential clients informing them that the service has been officially launched, how it is used, and the exact features it contains. Extensive brand awareness is not enough because customers also need detailed information on the usefulness of the new product in the market. There is, therefore, a need to carry out a study of this nature to assess the extent of adoption of cross-network mobile money transfer service by SMEs in Murang'a municipality and assess the individual attributes influencing the adoption of the service.

II. The Objective Of The Study

This paper sought to examine how individual attributes affect the adoption of cross-network mobile money transfer service by SMEs in Murang'a municipality.

III. Theoretical Literature Review

Three theories supported this research namely, Diffusion of Innovation Theory, Technology Acceptance Model, and Actor-Network Theory.

Fred Davis introduced the technology acceptance model (TAM) in 1985 in his dissertation at Massachusetts Institute of Technology, who stated that the acceptance and usage of a new system by individuals is motivated by an external environment that is composed of the capabilities and the exact traits of the innovation in question. To date, this model is still being applied by researchers in their studies because it is very efficient in theory and practice (Chuttur, 2009).

Technology Acceptance Model continues to be used by scholars due to its powerful prediction of the direction a new technology will take the moment it is introduced in the market. Reliable results about society's intention to adopt new technology over time have been realized through this theory's parameters (Alwahaishi & Snásel 2013).

According to this theory, when the society is made aware of a new product in the market they will only adopt if assured that the product will be useful in their daily activities. Perceived ease of use will equally influence the adoption decision of customers. Society's attitude towards usage of a product is another aspect explained by TAM and influences the acceptance of innovation (Christopher & Mee 2011).

The diffusion of innovations theory tells how innovations spread in society and its ultimate adoption. Some of the characteristics of a new technology namely relative advantage, compatibility, Complexity, Trialability, and observability influence the adoption decision by customers (Rogers 2003).

The Actor-Network model explains the relationship formed by all participants involved in the adoption process namely; adopters, mobile money operators, agents, and government policymakers (Latour (1987).

IV. Empirical Literature Review

Transactions related to mobile cash come with many challenges as far as the regulation process is concerned in Kenya and this prevents the realization of maximum benefits. Authorization exercise of mobile money agents and operators involves complex processes done in various government ministries and agencies, which sometimes lead to overlap of roles, and this discourages many people from implementing an innovation (Competition Authority of Kenya, 2019).

The Kenya National Payment System Regulations act of 2014 states that mobile operators should ensure that their systems are interoperable with other payment systems operating nationally and internationally, however, interoperability of mobile money agents do not exist in Kenya (Marc et.al, 2016).

Kenya has only implemented interoperability at the platform level which allows one to send and receive money across networks leaving out interoperability of agents which permits agents of one service provider to serve customers of another service and customer-level interoperability, which allows the customer access to their account through SIM cards of different operators (Central Bank of Kenya, 2018).

Despite many benefits for all parties involved in cross-network mobile money transfer, agent-level interoperability has not yet been achieved in Kenya. Though regulatory bodies are capable of making interoperability compulsory for all operators, this may not yield many results because they are expected to play a critical role to ensure full interoperability is achieved without compulsion (Mazer & Rowan, 2014).

Another aspect of the legal framework affecting the uptake of cross-network mobile cash transfer is consumer protection especially concerning transaction costs where a lot of transparency is called for. The laws of Kenya provide that a client is allowed to access relevant information about all costs charged by service providers before deciding on engaging in any transaction. Failure to disclose all the terms and conditions of products and services provided will hurt the levels of competition in the market (Andiva, 2015).

Customers' lack of alternatives in the market means that sellers will set prices without putting into consideration the forces of demand and supply due to little regard for competition and this means the firm will exploit market power at the expense of the buyers. Failure by clients to identify better offers from different suppliers means they will remain loyal to the existing provider of a service and this can prevent new firms' ability to compete with well-established and dominant organizations (Competition Authority of Kenya, 2019).

Mobile money transfer service is very popular especially among the population, which was initially not accessible to bank services. Many business traders and persons now use mobile phone accounts as the main platform for cash transactions. The increased usage of mobile money cash facilities has revived calls for transaction limits to be revised upwards. The growth is a result of increased usage of mobile payments by many parts of the economy namely monetary services, retail and wholesale trade, agriculture, transport, and health. Kenyans conduct many cash transactions in a day, leading to more calls to escalate the limits to accommodate the increased population, which is using electronic money (Rotich & Anyango, 2018).

V. Methodology

A descriptive survey design was used to carry out this research. This research was conducted in Murang'a Municipality, which is the administrative capital of Murang'a County in Kenya. The target population of this study comprised of 2500 registered SMEs in the municipality drawn from various sectors such as hairdressing, transport services, carpentry, retailing, wholesale, tailoring, hotel, and catering services. 250 respondents were chosen as sample size. A questionnaire was administered to collect primary data. Pretesting was conducted to ensure the reliability of the questionnaire. Descriptive and inferential statistics were employed in analyzing data.

VI. Data Analysis, Results, and Discussion

Response rate

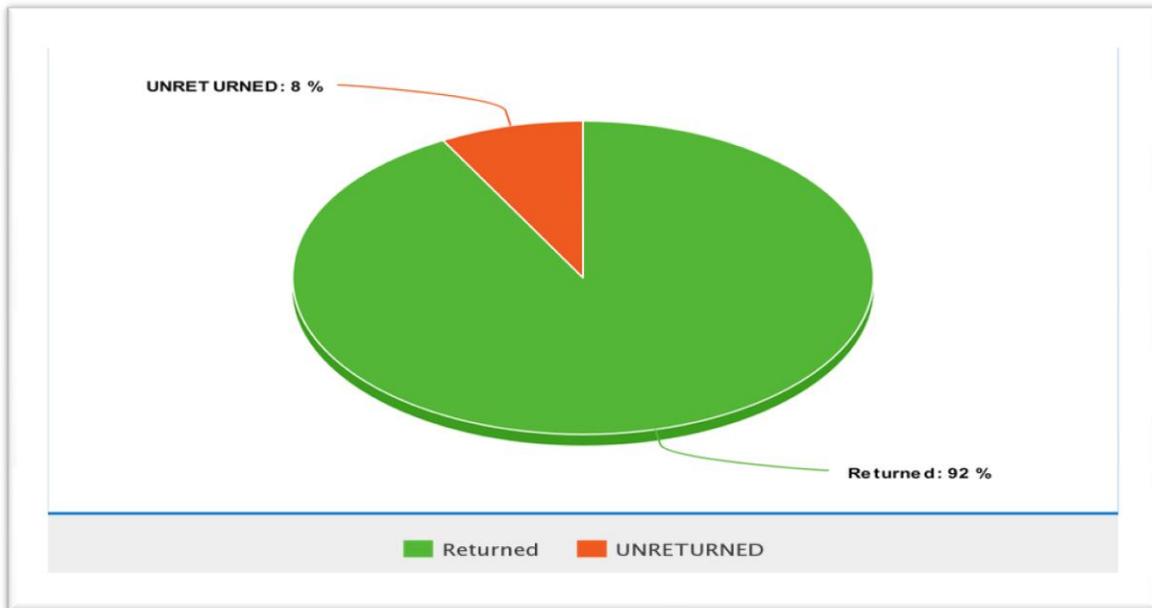


Figure 1: Response rate

This research targeted 250 SME traders out of which 230 respondents filled the questionnaire and gave correct information as requested; this was a 92% response rate. This rate of response was above the 50% recommended by scholars such as Mugenda and Mugenda (2008) and was appropriate for this study.

Respondents' gender

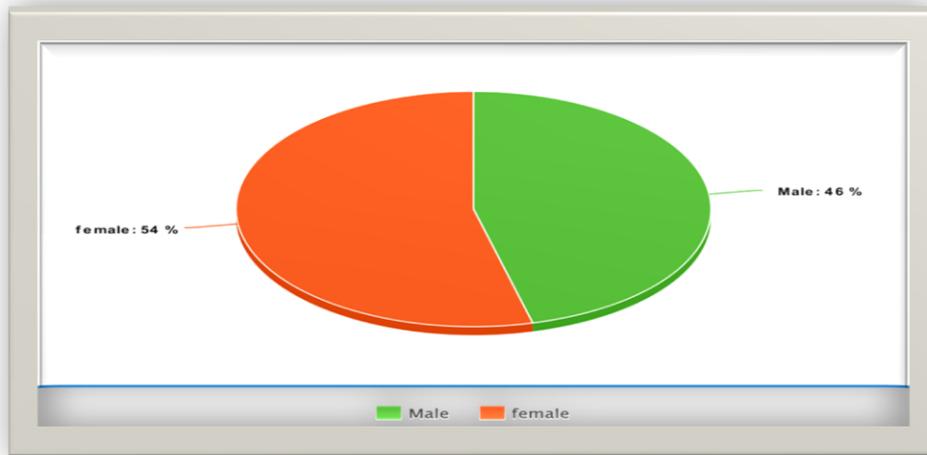


Figure 2: Respondents Gender

In this study, the gender balance was greatly observed. From the results, the male gender accounted for 46% and 54 % comprised of female respondents. The adequate representations of both genders ensured that the finding of the study did not suffer from gender bias.

Respondents' age

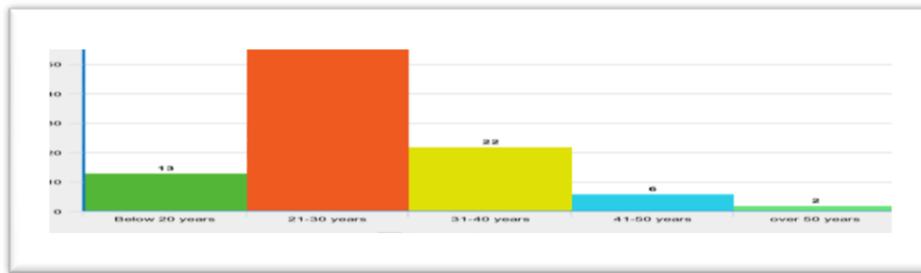


Figure 3: Respondents gender

57% of the traders who participated in this study were aged between 21 -30 years. According to Peter, (2014), young people are individuals aged between 25 and 35 years. This is an indication that mobile money transactions were popular amongst the youth. 22 percentage were those aged between 31-40 years. Traders aged below 20 years accounted for 13% followed by the age bracket of 41-50 years at 6%. Participants aged above 50 years had the smallest number at 2%. Data shows that 92 % of the respondents were below 40 years, which infers that most of the people working in small and medium enterprises are young. The findings of this study are in line with those of Bosire & Ntale (2018) on the effect of mobile money transfer services on the growth of small and medium enterprises in the informal sector of Nairobi County in Kenya. In that study, 72% of 389 respondents were composed of people of between 18-45 years. The study infers that these age groups comprise of young people who are involved in small and medium business enterprises and use mobile money services more readily compared to the older age groups.

Marital status of the respondents

Table 1: Marital status

Marital status of the respondents	frequency	%
Married	93	40
Single	137	60
Total	230	100

Source: Field data (2020).

Traders who took part in this research were required to indicate their marital status. The findings revealed that the majority of them at 60% were single and only 40% were married. Most of the individuals who took part in this survey were single. This is supported by the fact that they were young.

Education levels of the Respondents

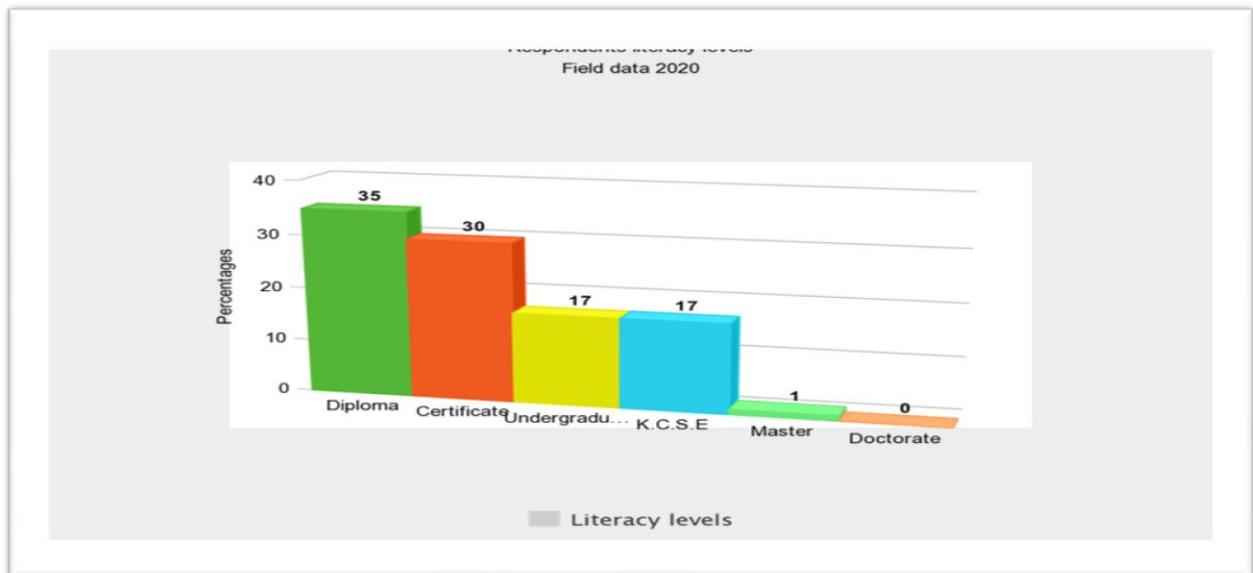


Figure 4: Education levels of the Respondents

The information on the level of literacy of traders was also collected in this survey to ascertain their level of competency in managing their business by using the new technology on mobile money. According to the results, 35 % of the respondents had diplomas, 30% had certificates, undergraduate and KSCE holders tied at 17%. Master qualification accounted for 1% in this study. No respondent had a doctorate in this survey. This indicates that due to low levels of formal employment in Kenya the majority of traders with secondary qualification and above is working in the informal sector. These results were in agreement with those of Ibrahim & Mahmood (2016) on mediating the role of competitive advantage on the relationship between entrepreneurial orientation and the performance of small and medium enterprises in Nigeria, who found out that the majority of the respondent in SMEs, were young people who had formal education.

The findings of this study, therefore, are a clear indication that the SME sector has continued to employ young educated people who cannot secure employment in a formal setting. There have been increased cases of unemployment in Kenya especially among the youth who are now finding a remedy to that problem in the SME sector.

Years in the current business

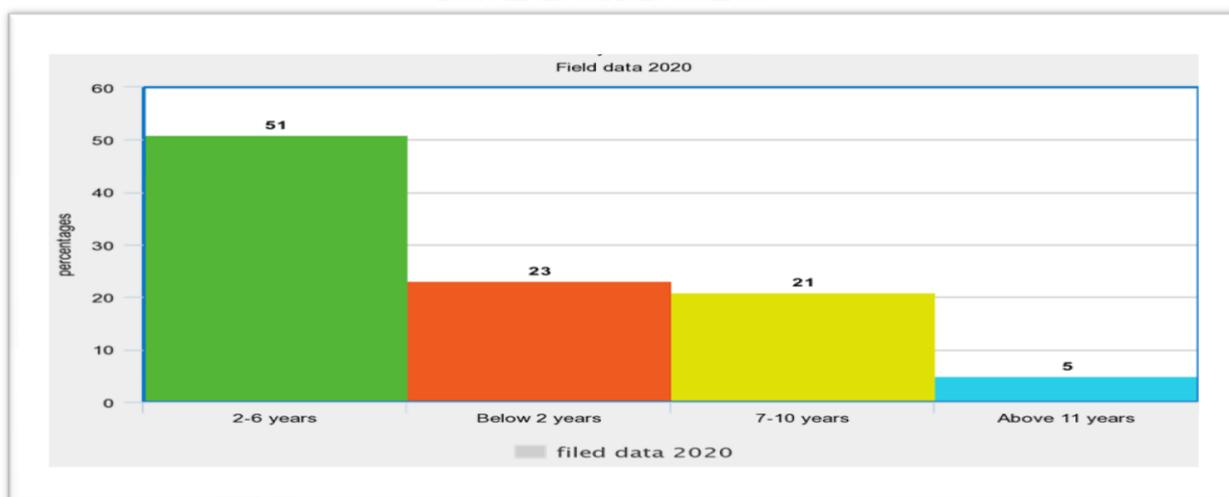


Figure 5: Period in the current business

Participants were asked to indicate the number of years they had operated in their current business to know the maturity levels at which traders were ready to adopt new technologies to boost their operations. The majority of the Traders at 74% had operated in less than 6 years, 21% between 7-10 years, and 5% above 11 years. The majority of the business operators had been in their current business in a period between 2-6 years and were ready to adopt new technologies to better their businesses. This was in agreement with the study by Kademteme& Twinomurizi (2019) on the ineffectiveness of technology adoption models in SMEs of South Africa, which concludes that most of the people who adopt information communication technologies are usually young.

Mobile money usage

Table 2: Usage of mobile money

Usage	Frequency	%
Yes	230	100
No	0	0
Total	230	100

Source: Field data (2020)

Respondents were asked to state whether they were using mobile money services or not, 100% of the respondents who took part in this survey indicated that they used mobile money in their day-to-day business activities. This is an indication that mobile money services were an integral part of SMEs' trading activities in Kenya.

Mobile Money Provider

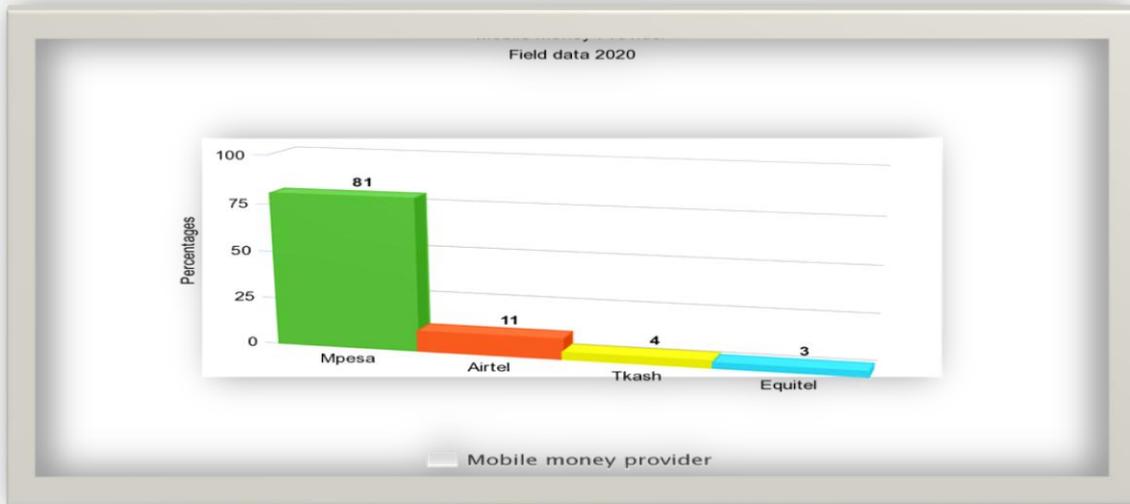


Figure 6: Mobile Money Provider

The SMEs traders who took part in this study were required to state the mobile money provider they had adopted in their businesses over time. From the results 81% use MPESA while 11% and 4% were subscribers of Airtel money and Tkash respectively. The remaining 3% had subscribed to Equitel. From the results, it is clear that the majority of the traders at 81% used MPESA as the primary mobile money provider in Kenya. This explains why people were comfortable with Mpesa services.

These findings concur with those of Nyaga (2017) on the impact of mobile money services on the performance of small and medium enterprises in an urban town in Kenya who established that Safaricom Mpesa was the leading mobile money provider in Kenya and was followed by Airtel money in the second position. From these findings its evident that MPESA dominance is still high even after the successful introduction of the interoperability of mobile money in the Kenyan mobile money market.

Usage of cross-network mobile money transfer service

The participants were asked to indicate whether they had utilized the cross-network mobile money transfer service. Only 36 % had adopted the service at the time of the survey while 64 % had not. These results confirm that the adoption rate is still very low and much needs to be done to increase the usage of the service.

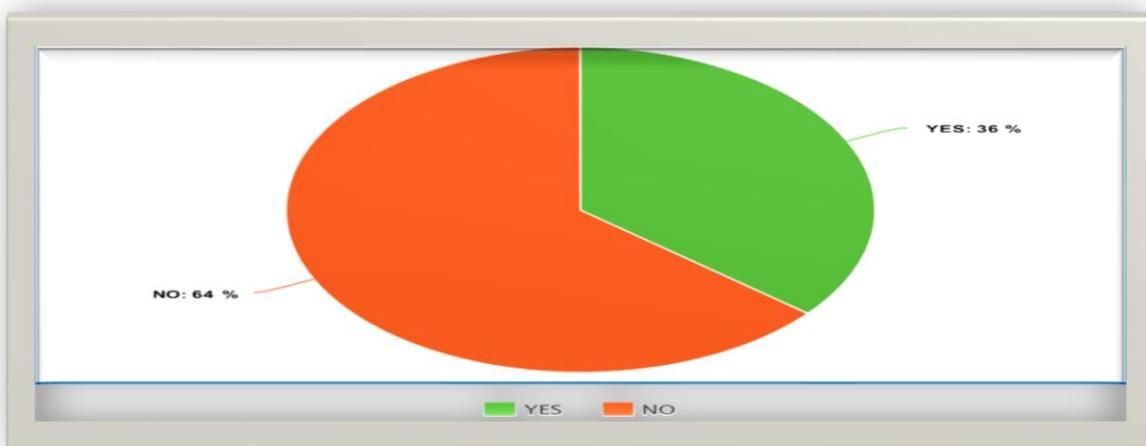


Figure 7: Usage of cross-network mobile money transfer service

Reasons for the low adoption of cross-network mobile money transfer service

Table 3: Reasons why respondents had not adopted cross-network mobile money transfer service

Reason for not adopting	Frequency	%
Lack of awareness	75	21
Lack of agent interoperability	70	20
Trust in M-Pesa	65	18
M-Pesa loyalty	61	17
Network challenges	58	16
Lack of options	27	8
Total	356	100

Source: Field data (2020)

The respondents who indicated that they had not adopted cross-network mobile money transfer services were asked to state the reasons why they had not used the service. The traders gave diverse reasons with the majority of them at 21% claiming that they were not aware that such a service was in existence. These findings were in agreement with a study by Islam, Khan, Ramayah, and Hossain (2011) on the adoption of mobile commerce service among employed mobile phone users in Bangladesh, who established that the adoption of Mobile Commerce Service was greatly influenced by user awareness.

Lack of agent interoperability was another reason, which made traders at 20% fail to adopt the service, and this was consistent with a study by Mazer & Rowan (2014) on, competition in mobile financial services in Kenya, draft brief prepared by CGAP for competition authority of Kenya who established that full interoperability could only be achieved if agents were interoperable. Platform interoperability was not enough to attract more customers and reduce Mpesa dominance because traders said they had no choice because even after receiving money from a rival network one could only withdraw from their registered network.

More other traders at 18 % had not adopted the new technology due to trust in Mpesa. Traders felt that Mpesa service was handling their financial matters more appropriately and this explains the trust they had in it and were not willing to adopt another service. This was in agreement with analyzed data of a study by Alsaad, Mohamad & Ismail (2017), which proved that trust had a significant impact when traders had to choose between existing and new technologies.

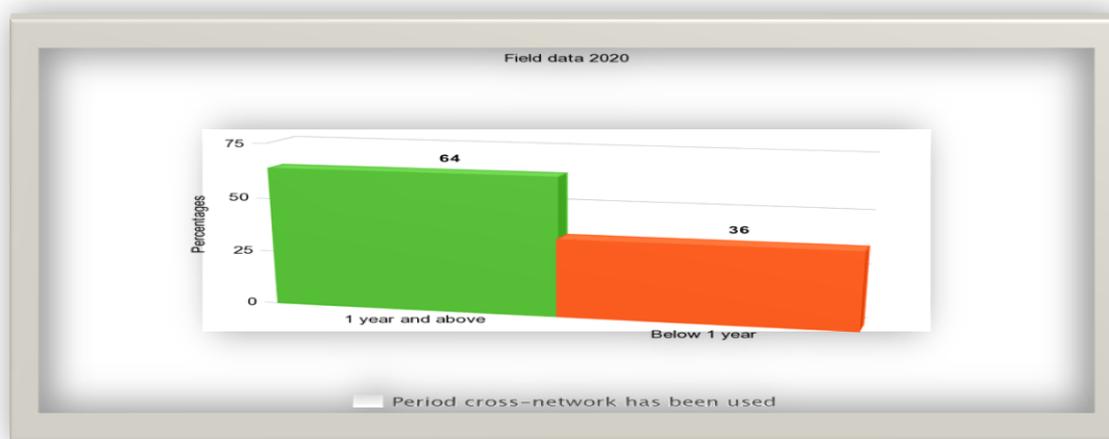
Traders also failed to adopt due to loyalty in M-pesa at 17%. The trades were more loyal to M-pesa because according to them it had given reliable financial services and we're not ready to shift their loyalty to any other new technology or rival operators in the country. These findings were in agreement with a study by Deng, Wei & Zhang (2010) who established that user loyalty in one technology harmed the adoption of new technology.

Traders also stated that the service was not friendly to them because the other mobile money providers were having network connectivity challenges, 16 % of the respondents gave this reason. Traders stated that Safaricom was very reliable on network connectivity than the other telecommunication networks in Kenya. They were not willing to shift to new technology due to the belief that they may experience network challenges. These findings were consistent with those of Dube & Gumbo (2016) who established that the adoption and Use of Information Communication Technologies in Zimbabwean Supermarkets was hindered by poor network connectivity resulting in low adoptions.

The little presence of other mobile money service providers was also a hindrance to adoption. This is confirmed by the fact that M-Pesa agents own the majority of mobile money agent shops in many places in the country. This was according to 8 % of the respondents. This has made competition difficult as such agent shops exclusively serve Safaricom subscribers. The other agents have limited presence and negatively affect the adoption of cross-network mobile money. A study by Kingiri & Fu (2019) on the diffusion and adoption of digital finance innovation in emerging economies established that Safaricom did not allow their agents to serve any other mobile money service providers and this hindered other networks from adequately competing with Safaricom M-Pesa.

Period of Usage of cross-network mobile money transfer service

The study also sought information from the respondents about the period one has used cross-network mobile money. The majority of them had used the service for one year at 64% and the remaining 36% had used the service for less than one year. The service was being implemented at the initial stages by most of the traders. This affirmed the low rate of adoption of the service as at the date of research.



**Figure 8: Period of usage of cross-network mobile money transfer service
Cross-Network Mobile Money Transfer Service Adoption Determinants**

The adoption of determinants under investigation was a government legal framework, individual factors, technological characteristics, and perceived social influence. These drivers were analyzed in detail with the help of descriptive statistics in this section.

Individual factors affecting the use of cross-network mobile money transfer service

The first objective of this study was to assess individual attributes influencing the adoption of cross-network mobile money transfer services. The factors, which were under investigation-included awareness, perceived usefulness, ease of use, and user attitudes. The mean and standard deviation of each factor was determined to aid in the discussion. The findings revealed that traders strongly agreed that individual attributes influenced their decision to adopt the service.

Individual factors, which affect the adoption of cross-network mobile money, transfer service

Table 4: Individual attributes

Individual factors	MEAN	Std. deviation
Awareness	3.964	0.723
Perceived usefulness	3.602	0.748
P.E.O. U	3.783	0.781
User attitude	3.554	1.027

Source: Field data (2020)

From the survey, most of the respondents strongly agreed that awareness of the existence of a new technology strongly influenced their decision to adopt as shown by a mean of 3.964 and a standard deviation of 0.723 which indicates that the data was cluster around the mean, perceived usefulness also had significant influence with a mean of 3.602 and it was supported by a standard deviation of 0.748 which was small enough to conclude that data points were concentrated around the mean.

Perceived ease of use also influenced the decision to adopt the service with a mean of 3. 783. User attitude towards the interoperability of mobile money had a significant effect on adoption by a mean of 3. 554. The standard deviation was also small and indicated that the data was concentrated around the mean.

From this survey, most of the respondents strongly agreed that individual attributes affected the adoption of cross-network mobile money transfer services. This was in agreement with a study by Benson (2017), on drivers of information communication, technology adoption by small and medium enterprises, which found out that perceived benefits had a significant influence on the adoption of new technologies and innovations.

These findings further concurred with a study conducted by Wambua (2015) on an implementation model for M-payment adoption: a case of lipa through M-Pesa by the mitumba traders in the Gikomba market, who established that individual factors on adoption of Lipan through M-Pesa service were positive and statistically significant in influencing the decision of traders to make usage of new technology.

Regression analysis

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.893	0.797	0.764	0.12235

The correlation coefficient, which gives the association between the variables under study, is known as R. In this study, a strong positive relationship between the study variables was established as indicated by R of 0.893. R-Squared on the other hand, measures and explains the variation of a dependent variable because of change in the independent variables in a regression model. In this study, the variation between the variables was strong as shown by R square of 0.797. The results further, gave an adjusted R squared of 0.764 a confirmation that there was a variation of 76.4% on the adoption of cross-network mobile money transfer service as a result of changes in the independent variables under study namely the awareness, perceived ease of use, perceived usefulness and user attitude.

Table 6: Regression reports for individual attributes

model		Unstandardized		Standardized	T	Sig.
		Coefficients		Coefficients		
		B	Std. Error			
1	(Constant)	0.898	0.367		2.469	
	Awareness	0.503	0.098	0.412	3.146	0.00375
	P.E.O.U	0.406	0.094	0.093	0.762	0.00531
	P.U	0.307	0.107	0.057	0.653	0.0046
	User attitude	0.159	0.100	0.183	1.585	0.00172

Source: Field data (2020)

The Established Regression equation was:

$$Y = 0.898 + 0.503 X_1 + 0.406 X_2 + 0.307 X_3 + 0.159 X_4$$

The equation revealed that holding individual attributes to a constant zero, there would be a positive effect on the adoption of cross-network mobile money transfer service by SMEs in Murang'a Municipality as revealed by a constant of 0.898.

The result further revealed that user awareness had a positive relationship with SMEs' use of cross-network mobile money transfer service as shown by a standardized coefficient of 0.3626 and $p < 0.05$ level ($t=0.3.146$) indicating the existence of a significant and statistically positive relationship.

P.E.O.U also had a positive and significant relationship with SMEs' adoption of cross-network mobile money transfer service as revealed by a constant of 0.093 and the $P > 0.05$ (0.762). Perceived usefulness resulted in a positive association with the SMEs' use of the service as revealed by a constant of 0.057. The user attitude also had a positive relationship as shown by a constant of 0.183.

VII. Conclusion And Recommendations

An assessment of individual attributes influencing the adoption of cross-network mobile money transfer by SMEs traders in Murang'a municipality was the main objective of this study and as such the adopters were asked the individual attributes which influenced their decision to use the service. Traders revealed that user awareness influenced their decision to adopt the service as shown by a mean of 3.964, perceived usefulness was also influenced by a mean of 3.602. Perceived ease of use also influenced the decision to adopt the service with a mean of 3.783. User attitude towards the interoperability of mobile money had a significant effect on adoption at 3.554.

It is therefore important to pay attention to user awareness of new technology to increase the rate of usage. The study also concludes that service providers explain the usefulness of a product to potential

customers, as they will increase the usage of a given product. On P.E.O.U, the study concludes that products must be made in such a way that they are devoid of difficulties in their usage.

The following recommendations were important based on the study objective and findings on cross-network mobile money transfer adoption by SMEs in Murang'a municipality.

Due to the low rate (36%) of adoption of cross-network mobile money service, the study recommends to policymakers to introduce interoperability at the agent level to attract more consumers. There is also a need to conduct aggressive marketing and campaign to increase awareness in the market.

VII. Suggestions for further areas of studies

The study focused on the SME sector, there is, therefore, a need to conduct a study in large organizations to assess the levels of adoption and effect on their performance. The study further, recommends a study on the effect of the regulatory framework on the adoption of cross-network mobile money transfer services in Kenya.

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