

## Mobile Money Services and the Performance of Microenterprises in Moshi District, Tanzania

Stephen E. Akyoo\* & Alfred S. Sife\*\*

### Abstract

This study determined the contribution of mobile money services to the performance of microenterprises in Moshi district, Tanzania. Multistage sampling was used to obtain 120 shop retailers for survey and six key informants for in-depth interviews. Quantitative data were analysed through SPSS whereas qualitative data were analysed through content analysis. Findings show that mobile money services contributed positively to the performance of microenterprises through time saving (88.3%); improving security of money (87.5%); enhancing customers' satisfaction (88.3%); increasing revenue (78.3%), profit (78.4%), sales volume (74.2%) and the number of customers (75.8%) as well as reducing transaction costs (49.2%). The performance of microenterprises was affected by the number of years on using mobile money services and the education level of microentrepreneurs. Several challenges were encountered in the course of using mobile money. Recommendations are made to improve the use of mobile money services in microenterprises.

**Keywords:** mobile money, mobile phones, microenterprises, Moshi, Tanzania

### 1. Introduction \*

Mobile phones are one of the most remarkable technological inventions of the past few years. These phones have become a common way for people to communicate and stay connected. The growth of mobile phone users has increased tremendously reaching 7.1bn subscribers worldwide in 2014 (ITU, 2014). Much of this growth has occurred in developing countries, which accounted for 80 percent of new subscriptions in 2012 (GSMA, 2012). In Tanzania, mobile phone services started in 1990s whereby initially more coverage was directed to highly populated areas, especially big towns. By the end of 2014, Tanzania had seven mobile service providers, namely Vodacom, Airtel, Tigo, Zantel, Tanzania Telecommunication Company Limited (TTCL), Sasatel and Benson. There were 28.02m mobile phone subscribers of which Vodacom had the highest proportion (12.31

million), followed by Airtel (7.6m), Tigo (5.7m), Zantel (2.36m), TTCL (227,424), Sasatel (4,810) and Benson (1,050) (TCRA, 2014). By 2013, it was estimated that more than three-quarters of Tanzanian households had mobile phones (Makame, 2013). Nevertheless, the actual number of mobile phone users might be higher than available statistics show due to sharing culture among families and friends.

Increasingly, mobile phones have become equipped with numerous features that reflect many aspects of human activities. The phones are now capable of not only receiving and making calls but also to store information, taking and processing still and moving images, playing sounds and videos, providing computing applications as well as providing access to a variety of internet-based applications. Mobile money is another important service that is being provided through mobile phones. Mobile money refers to a set of financial transactions primarily made through mobile phones. These services offer secure and convenient means for people to

---

\* Sokoine University of Agriculture (SUA), Morogoro, Tanzania: [stephenakyoo@hotmail.com](mailto:stephenakyoo@hotmail.com)

\*\*Sokoine University of Agriculture (SUA), Morogoro, Tanzania: [asife@suanet.ac.tz](mailto:asife@suanet.ac.tz)

send, receive and store money using mobile phones anywhere and at any time (Maurer, 2012). In other words, mobile money services create important mechanisms for financial savings, credits, insurance, payments and transfers. The mobile money industry exists at the intersection of finance and telecommunications, with a diverse set of stakeholders including mobile network operators, financial institutions such as banks, mobile money agents and customers. The cashless transactions enabled by mobile phones present advantages such as reduction of fraud and criminal activities, reduction of cash handling costs, and less reliance on cash-in-hand when a need arise (Wishart, 2006). As a result, mobile money services have created new opportunities for small businesses, particularly the reduction of transaction costs (UNCTAD, 2011; World Bank, 2009).

Studies carried out elsewhere confirm the positive impact of mobile money services on economic growth, poverty reduction and reduction of income inequality (Clarke, 2002; Beck et al., 2004). At the macro level, literature shows that mobile money facilitates transactions, increases money circulation in the economy, enhances money security, facilitates social capital accumulation, promotes microenterprises' performance, creates employment, reduces economic vulnerability, and fosters entrepreneurship (Mas & Radcliffe, 2010; Nunoo & Andoh, 2011; Donner & Escobari, 2010; Mbogo, 2010). At the individual level, mobile money has been reported to increase physical security of money, increase savings, generate employment, increase income, reduce costs and enhance the reachability and mobility for customers (Morawczynski, 2009; Jack & Suri, 2011; Walela & Bwisa, 2013).

Experience and circumstantial evidence reveal that the majority of microenterprise owners in rural areas have been using mobile money services to support their day-to-day business

activities. Although the available literature shows that there is a high penetration and adoption of mobile money in rural Tanzania for one to accompany it with a predictable positive economic impact (Nyamba & Mlozi, 2012), studies on the contribution of mobile money services to microenterprise performance in the country are scarce. Therefore, this study determined the contribution of mobile money services to the performance of retail shops in Moshi district, and assessed factors constraining the use of mobile money services for microentrepreneurs' development.

## **2. Conceptual Framework**

The conceptual framework (Fig. 1) of this study is based on the activity theory that was adopted and modified from Chogi (2007). According to this theory, there are subjects and division of labour in the social context. Subjects include microenterprise owners, and division of labour encompasses all the services provided by mobile money services. Microentrepreneurs make use of mobile phone (tools) to perform their various transactions. The tools (mobile phone) transform activities of these microenterprises to achieve the outcomes that are either tangible or intangible benefits (service accessibility, money security, cost saving, time management, agent networking and high income flow). These are to be measured by performance indicators such as customer satisfaction, managerial performance, gross profit, revenue growth, sales growth and operating efficiency.

## **3. Methods**

This study was conducted in Moshi district in Kilimanjaro region, Tanzania, in November 2014. Moshi district was selected because of the availability of many microentrepreneurs mainly due to the fact that business is one of the main economic activities for the ethnic groups (Chagga and Pare) living in Kilimanjaro region. The study sample was drawn through multi-stage sampling procedure because the population covers a large area.

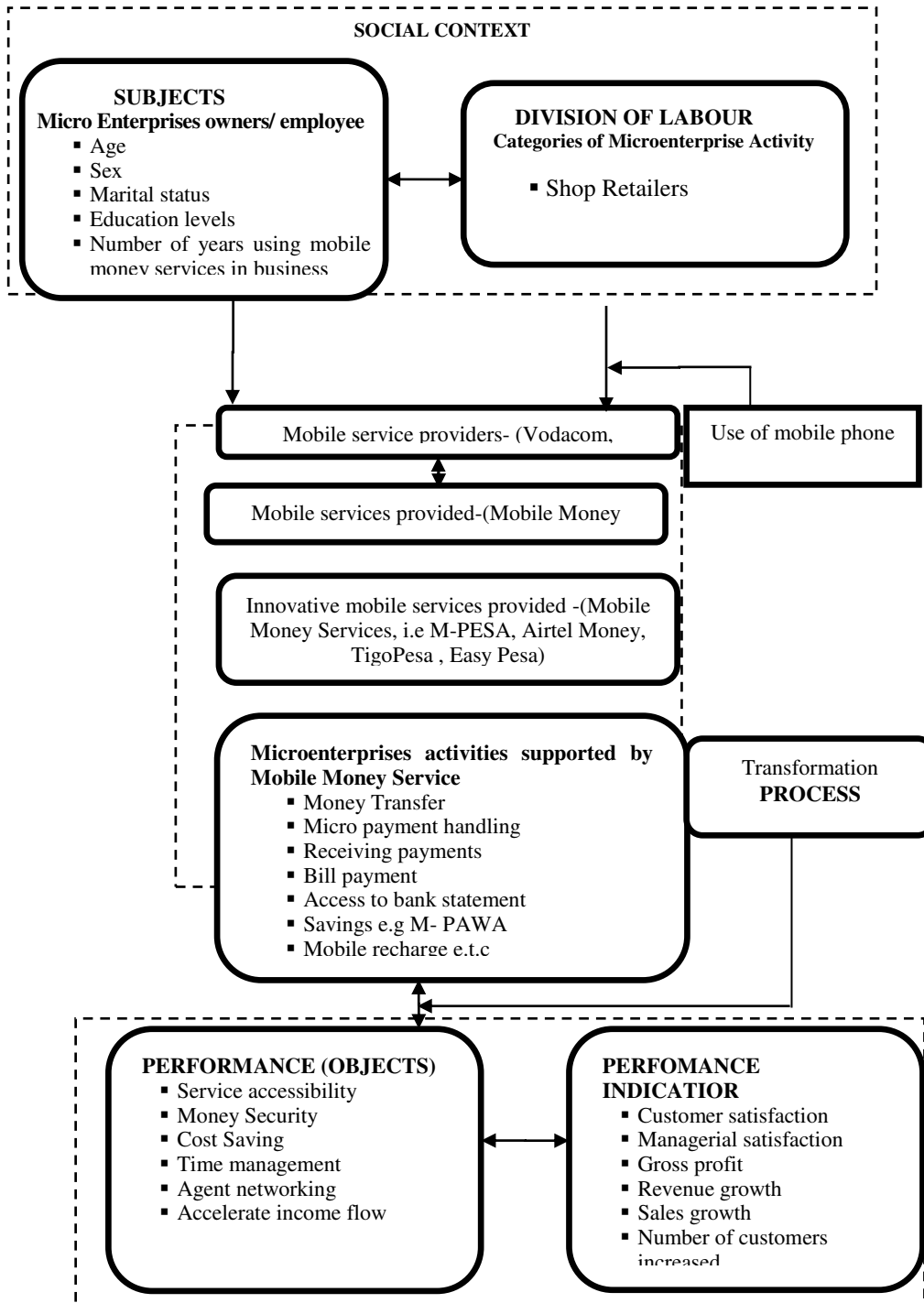


Figure 1: Conceptual Framework

Source: Modified from Chogi (2007).

In the first stage, two divisions - namely Kibosho and West Vunjo - were randomly selected out of the four divisions in the district. The second stage involved a random selection of 4 among 13 wards in the two divisions. In the third stage, 8 villages were randomly selected out of 68 in the four wards. A total of 120 out of 2,320 shop retailers (approximately 5%); 15 retailers from each village were randomly selected for the study. Only those who owned mobile phones were included in the sampling frame. In addition, 6 key informants were purposively selected, including 2 mobile money service providers from Vodacom and Airtel in Kilimanjaro region, 2 mobile money service agents in Moshi district and 2 retailers who demonstrated good experience in the use of mobile money services.

Data were collected through direct administration of questionnaire and key informant interviews. Quantitative data were analysed using Statistical Package for Social Science (SPSS), in which descriptive statistics including frequencies and percentages were computed. Inferential analysis was carried out using the following regression model:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \varepsilon$$

Where:

- $Y$  = Performance of Micro-Enterprises
- $\beta_0$  = Intercept of the equation
- $\beta_0 \dots \beta_8$  = Coefficients
- $X_1$  = Position held by respondents on the business
- $X_2$  = Sex of respondents
- $X_3$  = Age of respondents
- $X_4$  = Educational level of respondents
- $X_5$  = Number of years in a business
- $X_6$  = Capital invested on the business
- $X_7$  = Ownership of the business by the respondents

$X_8$  = Number of years on the use of mobile money services on the business

$\varepsilon$  = Error term representing a proportion of the variance in performance of micro-enterprises that is unexpected by the regression equation.

Qualitative data were subjected to content analysis where they were sorted and categorized according to emerging and recurrent issues, and were boiled down to small sets of underlying themes. The qualitative results were reported such that they supported quantitative results obtained through the questionnaire.

## 4. Results and Discussions

### 4.1 Demographic and Socio-economic Characteristics

The study findings indicate that over three-quarters (76.6%) of the respondents were 40 years or younger (Table 1). This suggests that most respondents were in the active age group that was capable of adopting mobile phones. Previously, Mehtens and Cragg (2001) reported that most youths have the tendency of adopting new technologies faster than aged people. The findings also show that there were more male (59.2%) than female (40.8%) business owners. This is usual since household income generating activities are often controlled by men in many patrilineal societies such as the ethnic groups in Moshi district. In addition, during the administration of the questionnaire, it often happened that whenever both spouses were present, the wife beckoned to the husband to answer the questions. A great majority (92.2%) of the respondents had attended formal education, with more than half (54.2%) having a maximum of primary education. Since using mobile phone requires only basic literacy (Omwansa, 2009), it can be concluded that the majority of those who owned the phones had the basic level of education to use them.

The findings also show that over two-thirds (66.4%) of the respondents had the experience

of 4 - 6 years in using mobile money services (Table 2). More than half (55.8%) of the shops

statements. These findings confirm the fact that mobile money services present a myriad

**Table 1: Demographic characteristics of the respondents (n= 120)**

Variable		Frequency	Percentage
Age category(years)	Below 30	46	38.3
	31 to 40	46	38.3
	41 to 50	16	13.3
	51 to 60	10	8.3
	61 and above	2	1.7
Sex	Male	71	59.2
	Female	49	40.8
Education level	Primary Education	65	54.2
	Secondary Education	38	31.7
	College Education	11	9.2
	University Education	5	4.2
	Illiterate	1	0.8

**Table 2: Socio economic characteristics(n=120)**

Variables	1 to 3 years	Frequency	Percentages
Experience of using mobile money services (years)	4 to 6 years	40	33.3
Capital invested on the business (Tsh)	100000 – 500000	80	66.4
	500001–1000000	30	25
	1000001- 1500000	67	55.8
	Above 1500001	19	15.8
	Below 5yrs	4	3.3
Experience on operating the business (in years)	6 to 8yrs	87	72.5
	9 to 11yrs	22	18.3
	Above 12yrs	7	5.8
		4	3.3

had operating capital of between TZS 500,001 and TZS 1 m. Nearly three-quarters (72.5%) of the microentrepreneurs had the experience of 5 years or less in operating business.

**4.2 Benefits of Mobile Money Services**

Respondents were presented with a series of statements based on a five point Likert scale ranging from “1 = strongly agree” to “5 = strongly disagree” that aimed at establishing the benefits of using mobile money services. These responses were later condensed into three categories of ‘agree’, ‘neutral’ and ‘disagree’ (Table 3). The findings indicate that a vast majority (80.9% - 90%) of the respondents agreed with almost all provided

of benefits to users. The findings also support earlier studies such as those of Omwansa (2009), Dahlberg et al. (2010), Kim et al. (2010) and Mitha (2011) that reported various benefits of mobile money to micro-business operators. The proportion of those who agreed to the statement that mobile money saves the cost of making transactions was relatively low (49.2%), perhaps because mobile phone companies tend to charge some fees whenever making transactions.

**4.3 Mobile Money and the Performance of Microenterprises**

Respondents were presented with a number of items on various business performance

***Mobile Money Services and the Performance of Microenterprises in Tanzania***

indicators, and were required to indicate the extent to which the use of mobile money has contributed to each indicator. Table 4 presents the results in a descending order which was

physical security of money (87.5%); enhances customers' satisfaction (88.3%); and increases revenue (78.3%), profit (78.4%), sales volume (74.2%) and the number of customers (75.8%).

**Table 3: Benefits of mobile money services (n=120)**

Statements	Agree	Neutral	Disagree
Mobile money is cheaper than traditional banking	89.1	6.7	4.2
Mobile money services saves time	88.3	7.5	4.2
There is wide coverage of mobile money services	86.7	8.3	5.0
Mobile money services influence high income flow	80.9	15	4.2
Service accessibility through mobile money is evenly attainable	85.8	10	3.8
Mobile money saves the cost of making transactions	49.2	40.8	10
There is physical security of money.	90	5.8	4.1

Key: SA= strong agree A=agree N=neutral D= disagree SD=strong disagree; Source: field data

**Table 4: Mobile money services on the performance of microenterprises (n=120)**

Performance Indicators	Cronbach Alpha	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean
It saves time	0.90	0.8	3.3	7.5	17.5	70.8	4.5
Physical security of money improved	0.91	0.8	3.3	8.3	27.5	60.0	4.4
Customer satisfaction increased	0.91	1.6	2.5	7.5	43.3	45.0	4.2
Revenue increased	0.91	0.8	3.3	17.5	50.8	27.5	4.0
Profit increased	0.91	0.8	4.2	16.7	51.7	26.7	3.9
Sales volume increased	0.91	1.6	2.5	22.5	60.0	14.2	3.8
Number of customers increased	0.91	0.0	5.0	19.2	55.8	20.0	3.8

obtained by computing, for each item, a mean score based on a five-point Likert type scale (1= strongly disagree to 5= strongly agreed). For the purpose of this study, a mean score of 2.5 and above was used to denote that mobile money had positive contributions to a particular performance indicator. Cronbach's Alpha coefficient for each score was 0.92, with the overall alpha of 0.923. This suggests that the items were suitable for measuring respondents' perceptions. A widely accepted cut-off is that alpha should be 0.70 (DeVellis, 2003).

The study findings show that the mean score for all seven items ranged from 3.8 to 4.5. This indicates that the use of mobile money services contributed positively to the performance of microenterprises in various ways. By combining the 'strongly agree' and 'agree' categories, the findings show that the use of mobile money in business saves time (88.3%); improves the

In other words, the use of mobile money enhances business performance in many but related ways. For instance, saving time because of using mobile money enables microentrepreneurs to be available on their business premises most of the time. This implies that more customers will be saved as they come; which in turn increases sales volumes, revenue and profit. Some microentrepreneurs had adopted "*LIPA HAPA NA M-PESA*"<sup>1</sup> service on their business, and claimed that this had positive contributions on their business. In this case items were sold and payments were done through mobile phone on a special number. Improved physical security of money

<sup>1</sup>*LIPA HAPA NA M-PESA* is a Swahili phrase meaning 'Pay Here Through M-PESA'. It is a services provided by Vodacom for the business owners only to transact with their customers by using a special number.

implies that owners can store money safely after sales, avoiding staying with bulk cash.

Inferential analysis was conducted to indicate the influence of mobile money services on the performance of microenterprise. The dependent variables (i.e., performance of microenterprise) were regressed with independent variables (demographic and socio-economic characteristics), giving a multiple correlation (R) of 0.650. This means that the independent variables used in the regression model collectively were strongly associated with the dependent variable. The adjusted multiple coefficient of determination  $R^2$  obtained was 0.423, meaning that the independent variables had the ability of 42.3% of explaining the variation in the dependent variable. The independent variables had negative and positive beta ( $\beta$ ) weights, implying that they had negative and positive contributions, respectively, on the dependent variable. The regression results revealed that the performance of microenterprises was greatly affected by the number of years of the use of mobile money services (0.742;  $p=0.000$ ). This implies that increased use of mobile money services in businesses over time enhances the performance of microenterprises. Furthermore, the education level of microentrepreneurs had a positive contribution to the performance of microenterprises (0.196;  $p=0.026$ ) (Table 5).

#### 4.4 Challenges Associated with the Use of Mobile Money

The study also sought to understand the challenges that microentrepreneurs encountered in the course of using mobile money services. The challenges reported include the poor network coverage (85.8%), high transaction costs (85%), lack of security at agent stations (83.3%), and scarcity of mobile money agents (73.3%) (Table 6). It was reported during focus group discussions that in some cases there was unreliable network connectivity. Mobile money users often received messages in their phones informing them that service is not available and they should keep on trying.

A scarcity of mobile money agents in the area was also reported as a challenge for some telecom companies such as Airtel-Money and Tigopesa. Furthermore, customers' security was reported as a challenge because of inadequate security at mobile money agent stations. Siau and Shen (2003) also report that security and user distrust in mobile money use may delay the adoption of mobile money services. High service charges were also reported as a challenge for most users although such costs varied among mobile companies.

#### 5. Conclusion and Recommendations

Based on the study findings we can conclude that the use of mobile money services has a myriad of benefits to microentrepreneurs. Mobile money services have significant

Table 5: Factors influencing performance of microenterprises(n=120)

Variable	Unstandardized Coefficient		Standardized Coefficient	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
Constant	14.134	7.739	-	1.826	0.071	-	-
Sex of respondents	-0.188	1.084	-0.013	-0.173	0.863	0.909	1.100
Age of respondents	-0.022	0.070	-0.030	-0.310	0.757	0.557	1.796
Education level of respondents	1.506	0.667	0.196	2.259	0.026	0.706	1.417
Number of years in business	0.021	0.252	0.008	0.082	0.935	0.595	1.681
Capital invested on the business	4.759E-7	0.000	0.027	0.317	0.752	0.759	1.318
Number of years in the use of mobile money services	0.010	0.001	0.742	7.241	0.000	0.504	1.984

R= 0.650,  $R^2 = 0.423$ ,  $p \leq 0.05$ . Source: field data

Table 6: Challenges associated with the use of mobile money (n= 120)

Challenges	Frequency	Percentage
Poor network connectivity	103	85.8
High transaction costs	102	85.0
Lack of security at the agent stations	100	83.3
Scarcity of mobile money agents for some telecom companies	78	73.3

contribution to the performance of micro-business especially on saving time, improving security of money, enhancing customers' satisfaction as well as increasing revenue, profit, sales volume and number of customers. Increased use of mobile money services in businesses enhances the performance of microenterprises. There are several challenges encountered by micro-entrepreneurs while using mobile money services. These include poor network coverage, high transaction costs, lack of security at agent stations and a scarcity of mobile money agents. It is recommended that telecom companies should improve and provide innovative mobile money services that can enhance the performance of microenterprises. Service providers should also expand the coverage of mobile money services and promote their usage particularly in remote rural areas where other financial services such as those of banks are lacking. Future research could make comparisons between users and non-users of mobile money services in microenterprises as well as explore factors for high uptake of M-Pesa services.

0757937888

#### References

- Beck, T., A. Demirgüç-Kunt & R. Levine, (2004), "Finance and Poverty: Cross-Country Evidence," *World Bank Policy Research Working Paper*, 3338 pp.
- Chogi, B.F.M., (2007), "The Impact of Mobile Phone Technologies on Medium and Small Enterprises/Jua Kali (Mses)," Paper presented to Communication Policy Research South on National and Regional Innovation Systems, University of Nairobi. pp. 82–86.
- Clarke, I., (2002), "Mobile Portals: The Development of M-Commerce Gateways," In, B. E. Mennecke & T. J. Strader (eds.), *Mobile Commerce: Technology, Theory and Applications*. Hershey, P. A: Idea Group Publishing.
- Dahlberg, T., N. Mallat, & A. Öörmi, (2010), "Consumer Acceptance of Mobile Payment Solutions," In, G. M. Giaglis (ed.), *M Business. The Second International Conference on Mobile Business*, Vienna. pp. 211–218.
- Devellis, R. F., (2003), *Scale Development: Theory and Applications* (2<sup>nd</sup>ed.), Thousand Oaks, California. pp. 232.
- Donner, J & M. X. Escobari, (2010), "A Review of Evidence on Mobile Use By Micro and Small Enterprises in Developing Countries," *Journal of International Development*, 22 (5): 641–658.
- GSMA, (2012), "Mobile Money for the Unbanked": Technical Report, 2012.
- ITU, (2014), "The World in 2014: ICT Facts and Figures," Technical Report, 2014.
- Jack, W & T. Suri, (2009), "Mobile Money: The Economics of M-Pesa," *NBER Working Paper 16721*, pp. 14–16.
- Kim, C., M. Mirsabit & I. Lee, (2010), "An Empirical Examination of Factors Influencing the Intention to Use Mobile Payment," *Computers in Human Behaviour*, 26: 31–32.
- Makame, A., (2013), "Access to Finance in Tanzania: Can A Mobile Financing Offer A Solution? Tanzania Country Level Knowledge Network," Policy Brief No. 9. pp. 22–25.
- Maurer, B., (2012), "Mobile Money: Communication, Consumption and Change in the Payments Space," *Journal of Development Studies*, 48(5): 589–604.
- Mbogo, M., (2010), "The Impact of Mobile Payments on the Success and Growth of Micro Businesses: the Case of M-Pesa in Kenya," *Journal of Language, Technology and Entrepreneurship in Africa* 2, No 1.
- Mehrtens, P. B. & J. Cragg, (2001), "A Model of Internet Adoption By SMEs," *Information and Management Journal*, 3(39): 165–176.
- Morawczynski, O & M. Pickens, (2009), "Poor People Using Mobile Financial Services: Observations on Customer Usage and Impact From M-PESA," Washington DC: World Bank.
- Mas, I & D. Radcliffe, (2010), "Mobile Payments Go Viral: M-PESA in Kenya," *Journal of Financial Transformation*, 4 (32): 169 -182.
- Mitha, B., (2011), "An Examination of Mobile Banking and Mobile Payments: Building Adoption As Experience Goods," Brief Policy No.12.



- Nyamba, S. Y & M. R. S. Mlozi, (2012), "Factors Influencing the Use of Mobile Phones in Communicating Agricultural Information: A Case of Kilolo District, Iringa, Tanzania," *International Journal of Information and Communication Technology Research*, 2(7): 72–75.
- Nunoo, J. & F. K. Andoh, (2011), "Sustaining Small and Medium Enterprises Through Financial Service Utilization: Does Financial Literacy Matter?" Paper presented at the 2012 Annual Meeting, August 12–14/ 2012, Seattle, Washington, 123418.
- Omwansa, T., (2009), "M-Pesa Progress and Prospects: Innovations Case Discussion. [[Http://Www.Strathmore.Edu/](http://www.strathmore.edu/)] Site Visited on 31/1/2012.
- Siau, K & Z. Shen, (2003), "Mobile Communications and Mobile Services," *International Journal of Mobile Communications*, 1(1–2): 3–14.
- TCRA (2014), "Quarterly Sector Statistics Report," Retrieved From [[Http://Www.Tcra.Go.Tz/ Publications/Telecom.Html](http://www.tcra.go.tz/publications/telecom.html)] Site Visited on 24/3/2015.
- UNCTAD (2011), "E-Commerce and Development Report, United Nations Conference on Trade and Development, New York.
- Walela, P & H. Bwisa, (2013), "Influence of Mobile Money Transfer Services on the Performance of Micro Enterprises in Kitale Municipality," *International Journal of Academic Research in Business and Social Science (IJARBSS)* 3, No.5.
- Wishart, N., (2006), "Micro-Payment Systems and Their Application to Mobile Networks," Washington, DC: *Info Dev / World Bank*. Available at: [[Http://Www.Infodev.Org/ En/ Publication.43.Html](http://www.infodev.org/en/publication.43.html)] Site visited on 13/2/2015.
- World Bank, (2009), *Uganda: Moving Beyond Recovery – Investment and Behaviour Change*, Washington, DC: World Bank. pp. 32–39.