

# Mobile Money Transaction As A Drive Towards Improvement Of Farm Produce Sales To Small Scale Farmers In Trans Nzoia County A Study Of Women In Kitale Town

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**ABSTRACT:** Poverty among women in Trans Nzoia district is mainly caused by poor returns from the sale of their farm produce, the main income generating activity of the women groups in the area. Poverty has also been occasioned by the small parcels of land which produce minimal yields, such as maize, vegetables and cereals. These women, a majority being old and semi-literate, are in dire need of high incomes to cater for the ever-growing needs. As it has been shown in other developing countries and elsewhere in Kenya, small-scale farming entangled with mobile money transfer technology can provide constant flow of income of up to three times what is earned from traditional marketing of their farm produce that is harvesting and taking to market for sale. Further embracing this fast rising technology provides high income through easy money transfer and transaction settlement. This paper will discuss the potential of mobile money, specifically to small scale farmers in fighting poverty among the rural women. High income translates to better standards of living, in that the women will be better able to meet the basic requirements of clothing, food, education and shelter for themselves and the orphans under their care. In addition by engaging in mobile money as a means of transaction of their farm produce will improve their negotiation skills alongside entrepreneurial skills.

**Key words:** Mobile money transfer; small scale production; food security; technology

## 1 INTRODUCTION

Historically, the agricultural sector has been the driving force of economic growth. In low-income countries, production of food and animals typically employs three-quarters of the labor force, contributing half of the net national product, absorbing two-fifths of capital formation, and generating three-fifths of exports including manufactured agricultural products. These characteristics not only reflect both the importance of agriculture in the total economic life in low-income countries, but also indicate the relatively modest level of economic development these countries have achieved. On the other hand, improved technologies, adapted to farmer needs, capabilities and profitability, are a necessary condition for agricultural and rural development (USAID, 2005). ICTs are defined as technologies that facilitate communication and the processing and transmission of information by electronic means. They have an enormous potential as tools for increasing information flow and empowerment of poor people. Mobile phones as an ICT tool have emerged as important medium for communication and exchange as well as tools for development. ICTs, whether older ICTs such as telephone, radio and television, or the newer ICTs such as computers, mobile phones and the internet, have helped in several dynamic ways to bridge gaps in livelihood opportunities by providing localized and relevant information to the community as well as necessitate business transactions (UNEP, 2009) A report by the ministry of information and communication 2006 indicated that ICT can played a dramatic role in enhancing economic and social development in developed countries by acting as a production sector for economic growth and an enabler for social development. ICT applications have enabled these countries to make substantial improvements in both productivity and quality in agriculture, manufacturing, infrastructure, public administration and services such as finance, trade, distribution, marketing, education and health. The government's key objective is to transform the Kenyan

economy through ICTs by promoting and facilitating the private sector to serve as the driver for economic development through innovation in the ICT sector. The strategic focus of Kenya's ICT Strategy for economic growth is to simultaneously target the development of the ICT sector and to use ICTs for employment creation, poverty reduction as well as a broad-based enabler for economic recovery and the achievement of national developmental goals; vision 2030. ICT has been used to assist the poor by providing among others better access to market and other production technology information such as prices for their inputs and outputs. Its impact is measured in terms of improved incomes, profits and sales, lower costs for all business transactions, increased efficiency, competitiveness and market access. The use of mobile money transfer has brought better understanding of the distribution systems, rights and policy enforcement mechanisms. The impact is measured in terms of improved access and quality of the services obtained. It has also made better enhancement of social networks measured in terms of improved perceptions of connectedness, empowerment and reduced isolation. Enhanced use of the telephones, SMS text, beeping and creation of a telephone address using mobile communication facilities, for instance. Those who are in the service provision such as telephone kiosks would be able to create partnerships and have a better understanding of the needs of each other through collaboration and get into business transactions. M-Pesa is a mobile phone based money transfer system in Kenya which grew at a blistering pace following its inception in 2007. It is a system operated by Safaricom, Kenya's largest cellular phone provider. M-Pesa allows users to exchange cash for "e-float" on their phones, to send e-float to other cellular phone users, and to exchange e-float back into cash. 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 ac-

tivity, family relations, and risk management and mitigation, among other things. (Mbiti and Weil, 2011). Nagarajan and Haas (2011) indicated that mobile money transfers that is M-PESA in short helps enhance food security by facilitating time sensitive money transfers, spreading risks across geographic regions, making users credit worthy, and by boosting local production of food and purchases of goods and services. As a result, food security effects are noticed in improved food production, and in access to and consumption of diversified foods among the households that receive remittances through M-PESA. These individual effects are beginning to spill into the community to improve overall food security in the region. Improvements in food security emerged as one of the four major effects of M-PESA. While the other three effects – money circulation, transaction ease, and security of money – mirror M-PESA's marketing campaign as a fast, safe, easy, and affordable way to send and receive money. Food security refers to sustained food production, and access to and consumption of adequate and nutritious food by most households to lead a healthy life. M-PESA (mobile money) is an agent-assisted, mobile phone-based, person-to-person payment and money transfer system that was launched in Kenya in 2007. It quickly grew and has become the most well-known system of its kind in the developing world. In May 2011, over 14 million people were M-PESA users, enabling them to send money in electronic form, store money on their mobile phones in an electronic account, and deposit or withdraw money in the form of hard currency at any of the 24,000 nationwide M-PESA agent locations (Nagarajan and Haas, 2011). M-Pesa is a money transfer system operated by Safaricom, Kenya's largest cellular phone provider. M-Pesa allows users to exchange cash for "e-float" on their phones, to send e-float to other cellular phone users, and to exchange e-float back into cash (Mbiti and Weil, 2011). M-pesa remittances have helped time-sensitive farming activities, where there has been an increase of agricultural productivity. Farm inputs have been easily purchased such as seed payment alongside the payment of the cheap labor there by M-pesa service seen to facilitate food production, finding ready market especial since money is in circulation.

### **Study area**

The study was conducted in Kitale town; Kitale is an agricultural town in western Kenya situated between Mount Elgon and the Cherengani Hills at an elevation of around 7,000 feet its urban population was estimated at 220,000 in 2007. The town is the administrative centre of the Trans-Nzoia District, in the Rift Valley Province. The main cash crops grown in the area are sunflower, tea, coffee, Pyrethrum, seed beans and seed maize, Kitale is a market town for the local agricultural area (Wikipedia, 2008).

### **Rationale**

According to Appropriate Technology for Sustainable Food Security report of 2001, Low-income rural residents have adopted some information technologies with considerable success, the best known being the mobile phone which has helped reduce the information gap between farmers and traders. Mobile phones are inexpensive, require no special training, and serve social functions beyond their use in rural trade. They are also easily shared or rented out; they provide easy money transaction services providing nonfarm income opportunities for enterprising rural households. The ability of friends

and family to make immediate, real-time transactions of as little as \$2 helps prevent unnecessary periods of going without food. Early research shows that households with M-PESA are more successful at weathering negative events and, specifically, do not reduce their food consumption when faced with a shock (Ng'weno, 2010). It was therefore important to investigate the success factors attributable to the use of mobile payments by women operators because this would provide significant insight into the entrepreneurial impact of the mobile payments technology investment towards improved food security by the women operators, who usually are the most, looked at homes by the young and the aged to provide food. This in turn will enable the mobile payment technology provider and his agents offer the necessary technical support and advice to their clients as well as providing new developments.

### **Rate and Bias of Technological Change**

At the level of a firm, technological change can fully be characterized by its bias and its rate (Diamond, 1965). The preconception of technological change is specified by the difference in the rates of change in the peripheral productivities of factors due to technology. It measures which factor of production is made relatively more productive by technology and, hence, which factor is technology aiming at substituting in production. Technological change can, increases the rate of change in the productivity of land and labor, to analyze the partiality of technological change at the level of a given agricultural region, the concept of bias needs to be extended to include the differential productivity-enhancing effects of technology not only among factors but also among activities, production systems, farms, and regions. (Alain and Dethier, 1985)

### **Mobile money use ratio between men and women in Kenya**

Research shows that mobile money transfer or transaction has been reaching women quite rapidly, according to GSMA Mobile Money for the Unbanked Programme 2010 indicates that while only 38 percent of users were female in 2008, this share had increased to 44 percent by 2009. Amongst adults over 18 years of age, the share of men using M-PESA saw a healthy jump from 25 to 54 percent between 2008 and 2009. But the share of women using the product leapt in comparison, from 15 percent to a level approaching gender parity of 41 percent. It was important then to focus on women in Kiminini, Cheren-gani and Endebess within Trans Nzoia County.

### **Convenience easy access and Security as result of mobile money transactions**

There are two types of security referenced in this study: security of food and money. Money security refers to ability to accumulate cash and safely keep it secure from theft. This enables easy access whenever need arises and also one can be able to control the use. Food security on the other hand refers to access at all times to sufficient, safe and nutritious food to meet daily needs and food preferences for an active and healthy life (Plyler e.t al, 2010). It is also mentioned in terms of increased agricultural productivity, improved access to nutritious food and a variety of foods, and more timely access to agricultural inputs.

### Concept innovation

According to New Growth International 2009, the theory of induced innovation, agricultural production and trading decisions generally reflect technical choices that facilitate or catalyze the substitution of relatively abundant factors of production and trade for relatively scarce and expensive ones. Technological adjustments that ease these factor substitutions release constraints imposed by resource scarcity. Technical choices are thus behavioral responses to particular constraints that both determine and reflect resource intensities and specializations. An innovation may be an idea, object or practice that is perceived new by a social system in which actors invest cash, labor or learning that is characterized by:

- a) 1. They have contributed to productivity growth;
- b) They have resulted in enhanced efficiency and increased farmer incomes;
- c) They have addressed equity concerns
- d) They are sustainable.

There is widespread agreement on the importance of technological progress or innovation for economic growth. Technological change increases the productivity of land, labour and capital, reducing costs of production and improving the quality of outputs. The ability to be internationally competitive also depends on having up-to date technology (UNDP, issue paper, 2007), all these results into food security in a community.

### Statement of the problem

International food policy research institute, 2008 reported that about 75 percent of the world's poor people live in rural areas, and most of them are involved in farming. Agricultural development in these areas is often constrained by issues of access to appropriate technologies resulting in among others food insecurity. Food security has become a major concern for government policy makers and donor institutions in their endeavor to reduce poverty and farming has been identified to play a possible integral role in achieving this objective. A number of mechanisms and financial institutions have come up to support farmers through advancing finance to the farmers in order to meet their cost of farm inputs, labor and marketing of farm produce with the aim of improving the lively hood of these farmers. However, the measure of the impact of such financial institutions advances has not been felt by many small scale farmers especially the women in rural Kenya thus their sustainability and eventual reduction of poverty at the community level is at stake. It is of concern therefore to stakeholders in the agricultural sector that these financial institutions to have significant impact on the beneficiaries by way of improved food security and increased incomes through reliable, easy access to financial services anytime need arises. This study was therefore aimed at assessing the effect of mobile money transfer activities as a technology on the livelihood of small scale farming women in Kitale town of Trans Nzoia district in terms of food security and poverty reduction.

### Study Objectives

The study specific objectives included:

- i) To determine the relationship between mobile money transaction activities to women in Trans Nzoia and agricultural activity.

## 2 METHODOLOGY

### Sample and Sampling Design

(3) Areas were purposively selected for the study out of the three major constituencies of the larger three trans-Nzoia region namely: Cherangani Constituency, Kwanza Constituency and Saboti Constituency. A sample of twenty respondents was drawn from these areas for the entire study. To ensure a fair representation for the study sample, proportional allocation was used (Kothari, 2004) as shown below. Ratio of proportional allocation:

$$\omega_i = \omega^y/x$$

Where  $\omega_i$  the strata sample size,  $\omega$  is the overall sample size,  $y$  is the strata size and  $x$  is the total population. Stratified random sampling was applied for the study given the heterogeneity of the target population (Kothari, 2004). Samples were drawn randomly from the study area. Using this ratio the twenty respondents were allocated for the study as shown in Table 1 below.

**Table 1: Sample Size by region**

Region	Total Population	Sample Size
Kimini area	34	7
Cherangani area	42	8
Endebess area	27	5
<b>TOTAL</b>	<b>103</b>	<b>20</b>

### Data Collection Instruments and Data Collection

#### Data Collection Instruments

Primary data was collected as per the sample design. Two instruments were used as follows:

#### Structured Questionnaire

The researcher used a structured questionnaire which was researcher-administered, face to face with the respondent to cushion the inability of the respondents to easily interpret some specialized questions (Mugenda and Mugenda, 2003). The questionnaires consisted of mainly closed and a few open-ended questions.

#### Interviews Specific on mobile money transactions

Interviews were used to obtain information on specific mobile money transactions including M-pesa, agents' availability and budgetary allocations to complement the questionnaires in the research. The interviews were conducted during the same time period with the administration of the questionnaires.

#### Data Collection

The respondents were required to complete the questionnaire voluntarily. The completed questionnaires were checked for plausibility, integrity and completeness resulting in twenty (20) usable cases. The interview protocols on the other hand were

employed to capture the qualitative information of the research. The respondents' information such as age group, status and period of use of the mobile money service was also captured using single item questions. To discover the factors that influence the intention to use the mobile money services by the women, factor analysis were employed.

### 3 DATA ANALYSIS

#### Weighting of Mobile transaction Penetration and Utilization Indicators

OECD provides guidelines on organizational ICT indicators and comparable statistics on access and use of ICT but it does not give recommendations on the use of a particular type of sample frame, sampling methodology, processing of collected information, imputation and weighting of data (Robert, 2005). For the purpose of this study an ICT penetration and utilization index was developed based on the perceived contribution by the mobile phone element to ICT penetration and utilization. Access weight of range 1 to 10 was allocated as shown in table below.

**Table 2:** Access weighting

Element	Weight allocated
Mobile Phone	6

Weighting is important noting that the various elements of ICT do not have equal contributions to ICT penetration and utilization such as the high prevalence of telephone extensions which would give a false high level of ICT penetration (Kiula and Wafula, 2010). Usage weights was allocated on a scale of 1 to 5 basing on the perceived level of sophistication of the user on the given ICT tool and the level of investment that involved skill effort and finance to reach that level of usage as shown in Table.

**Table 3:** Mobile Usage weights

Use	Telephone	Mobile
Call	1	1
SMS	4	3
M-Pesa	1	5

The usage of mobile phones for word and M-pesa processing is considered a higher level of Usage sophistication than the use on calls.

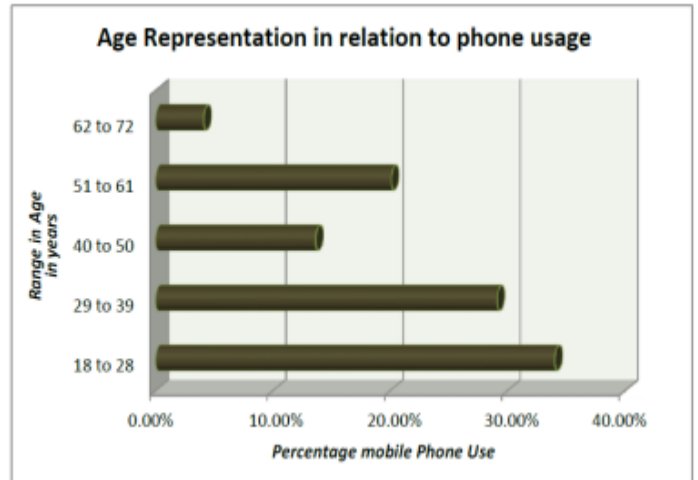
#### 3.1 FINDINGS

##### Age Representation in relation to phone usage

The findings indicate that the 20 of women age group in relation to mobile phone usage ranged from 18 years to 72 years as shown in the figure below.

**Table 4:** Age groups and Per. phone usage

Range in age	18 to 28	29 to 39	40 to 50	51 to 61	62 to 72
Percentage mobile phone use	34.03%	29.12%	13.65%	20.10%	4.10%



Graph showing age groups and mobile phone use This corresponds well with the study in gauging the popularity on the mobile phone popularity among different age groups.

##### Educational level

A simple majority of the women in the study had diploma as the highest level of education followed by secondary school education with degree and higher national diploma a distant third and fourth in that order as shown in Figure

**Table 5:** showing Educational level of the women sampled

Education level	Secondary-level	A-level	Diploma-level	HND-level	Degree-level
Percentage representation	31.60%	3.30%	43.00%	14.00%	9.10%

This status with respect to the level of education implied that while most of the women used the mobile phone well even in advanced operations like mobile money transactions, most of them lacked advanced education with 31.60% being secondary school leavers and over 66.10% having a diploma or below. Degree holders account for a meager 3.30% of the women.

##### Mobile money transaction Penetration and Utilization

The study recorded mean mobile money transaction penetration and utilization levels of 38.16%, 32.13% and 29.71% for Kiminini, Cherengani and Endebess respectively while the overall mean mobile transaction penetration and utilization for the three areas was 33.33%.

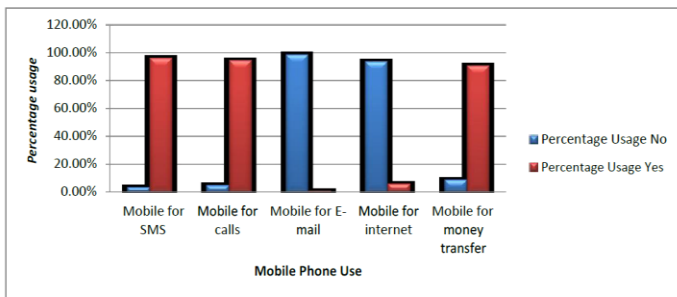
##### Diversity of mobile phone utilization

It was clear from the study that the utilization of the mobile phone was highly confined to the traditional use since the benefits of coverage were present in the area, alongside this; there was a high utilization of the mobile money transaction

activities as reported by the sample of the twenty (20) women. From the table below the women reported that most of the SMS and telephone communication they carried out were related to their agricultural business as well as mobile money transaction services. They were either ordering for their farm inputs and pay via M-pesa or were receiving customers' requests along with the money over their mobile phones.

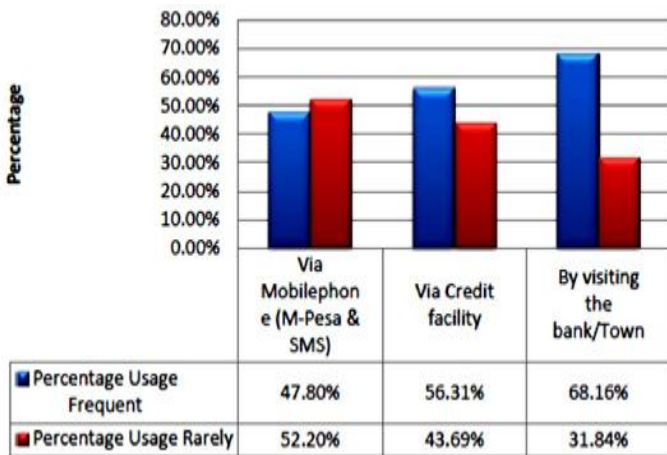
**Table 6:** Diversity of mobile phone utilization by the women

Mobile phone Usage	Percentage Usage	
	No	Yes
Mobile for SMS	3.60%	96.40%
Mobile for calls	5.10%	94.90%
Mobile for E-mail	99.06%	0.94%
Mobile for internet	93.90%	6.10%
Mobile for money transfer	9.00%	91.00%



**Access to Agricultural inputs and equipment in the farm as a result of mobile money services**

A close look at Figure below overleaf reveals an important aspect. It is noteworthy that a simple majority of the women had access to farm inputs and equipment in the area with (74.7%) of them reporting to easily buy farm inputs and equipment via m-pesa frequently. While 18.3% of them have been buying them after getting financial assistance from their working class members of their family. 7% of these women had to buy these farm inputs only on credit or going to town to solicit for funds. This according to the study was time consuming.



**Access to food security as result of Mobile money transfers**

This situation was also replicated in the use of the mobile phone for food accessibility, as indicated in table below. Given

that most of the women approached were house wives, most of their family members who were working far away from home were sending money each time to provide for their daily needs this was via mobile money.

Access to Money /food	Percentage		
	Monthly	Weekly	Daily
Via Mobile phone (M-Pesa)	73.89%	20.11%	6.00%

73.89% of the women received financial support monthly, 20.11% received financial support weekly and 6% of the women received M-pesa daily. This then could be transformed into food through shopping of daily needs as well as payment of other services.

**4 Discussion of the findings**

From the findings the study it was clear that the utilization index showered that mobile phone penetration was at 6/10 meaning that it was the major form of communication and connectivity the areas of study. For research purposes this was seen as a major form of access to business through the mobile money transaction as well as business deals via sms and calls. Basing on this, mobile money transaction occupied 5/5 of usability which was considered a high- level as compared to call rates. Of the women sampled, those with ages above 35 years represented 66.97% of the mobile phone usability; this corresponded well with the popularity of the mobile phone use among these women. This indicator was important to the study to determine the sophistication of the phone use and the ages of the women. Since the mobile phone use did not pose a great challenge in sophistication to its users, the study sought to find out the level of education for this group of women to see if it matched with the way they used their mobile phones. The study found out that there was no any relationship between the mobile phone use and education. This was important to the study in determining the mobile phone usability among these women in the rural areas. Basic knowledge on mobile money transaction was important for these women and most of them carried their agricultural businesses with the phone as a tool to get business deals as well as a bank to receive, send and keep money. This was an important factor when compared to food security issues, most of this women who were transacting using mobile phones had adequate access to food and other related factors as compared to their peers who were not. Access to agricultural inputs and machinery as a result of mobile money services was seen as an important factor towards food security realization, there were a high percentage of the women who reported to purchase or get access to farm inputs easily via mobile money. This was easy as they could order right from the farm and pay pending delivery, these then necessitated continuity of work flow. At the same time if they ran out of inputs they could request for funds from their family members who were working class. This was seen as a great step towards food security realization to these women.



## 5.0 Conclusions and Recommendations

There is dire need to educate, create awareness and generally involve people's participation to enjoy technological benefits as they play a vital role in the adoption of food security. Currently rapid changes in technology, means that a lot need to be done to change people's perceptions to move from traditional methods of doing business and agriculture to new mechanisms or approaches to experience food security for vision 2030. In fact the region has potentiality to many other technologies like e-commerce which are not in developmental stage mainly because of economic constraints. Budgetary allocation to the Ministries needs to be increased in order to sustain continuous technology development and transfer to improve research and extension activities especially in the area of technology innovation in the area of agribusiness and technology. In order to reduce pressure of maize as food, greater efforts will be placed in diversification in ICT which include the use of new modes of information so as to reach the rural population adequately on various issues surrounding food security.

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