

**THE ROLE OF MOBILE PHONES IN FACILITATING COMMUNICATION
AMONG THE MAASAI PASTORALISTS IN TANZANIA**

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Abstract

This study aimed at examining the role of mobile phones in facilitating information communication for socio-economic development among the Maasai pastoralists in Monduli District, Tanzania. Specific objectives were to examine the pattern of access to and use of mobile phones by the pastoralists, investigate the ways in which mobile phones facilitate communication among pastoralist communities, examine the constraints in the usage of mobile phones and determine ways in which the usage of mobile phones by the Maasai pastoralists would be improved. The study was basically cross-sectional and data was mainly collected through questionnaires, interviews and observations. Major findings of this study revealed that many of the mobile phone options are known and used, but phone call is the most used option. It was also revealed that mobile phones are used for communicating with friends, family and veterinarians in carrying out financial transactions, finding out livestock prices in the market and information on new grazing areas. The constraints encountered in the use of mobile phones include network outage, high cost of recharging batteries, unavailability of vouchers, lack of electricity in the village and the language barrier. Finally, recommendations for improving mobile phone usage are given.

Keywords: MOBILE PHONES, MAASAI PASTORALISTS, MONDULI – TANZANIA.

Introduction

Mobile phones are transforming the lives of many people in developing countries. They are widely recognized as an important technology platform for development because they only require basic literacy and therefore are accessible to a large portion of the African population. The technology also uses voice communication which is essential in rural

areas where the level of literacy in some places is still low. Mobile phones therefore, are used to facilitate communication for socio-economic development which is a key component in improving livelihoods of rural communities.

In the context of pastoralist communities, particularly the Maasai in Monduli District, Northern Tanzania, mobile phones facilitate access to extension services, including support on pest and diseases control, improved inputs and technology on animal keeping, thereby increasing productivity, access to information on remunerative markets and animal safety. Furthermore, mobile phones increase social acceptability and provide new contacts and networking, which increases the bargaining power and smooth organisation of the social services (Verlaeten, 2002). The same theoretical base assumed that in many rangelands, pastoralists live in social isolation and generally have no way of knowing about the best production practice and prices before they travel to the market due to poor communication facilities.

Mobile phones are Information and Communication Technology (ICT) devices which have changed the lives of many people, especially rural communities, which before were isolated in reference to access to ICT devices, showing the digital divide between those who have and those who do not. Today, rural communities in Tanzania, including the Maasai pastoralists have unprecedented access to communication flows using mobile phones (Sife *et al*, 2010).

The role of mobile phones in facilitating communication of information for socio-economic development between the pastoralist communities in Tanzania is unknown. The pastoralists particularly the Maasai, live in social isolation, and are thus more likely to encounter problems in getting information. Among the challenges the Maasai are facing include security concerns for their livestock, especially when attacked by cattle rustlers, consultations with distant veterinarians in the case of livestock problems and keeping in touch with their families and friends (Sife *et al*, 2010). In this case mobile phones are necessary for resolving these problems. However, few empirical studies have been done to determine the role of mobile phones in furthering the socio-economic development of the pastoralist communities, the Maasai in particular. Therefore, this was the gap which this study intended to fill.

Objectives of the Study

The main objective of this study was to assess the role of mobile phones in facilitating communication of information for socio-economic development among the Maasai people of Monduli District, Northern Tanzania. Specifically, the study examined the pattern of access and use of mobile phones by the pastoralists. It investigated ways in

which mobile phones facilitate communication among pastoralist communities; examined the constraints in the usage of mobile phones by the Maasai as well as ways in which the usage of mobile phones by the Maasai pastoralists can be improved.

The Maasai People and the Usage of Mobile Phones

The Maasai People

The Maasai are among the predominantly traditional livestock keepers in Northern Tanzania. They keep cattle (traditional short-horned zebu), goats, sheep and donkeys which are mainly used for transporting water, firewood and other things. To the pastoral communities like the Maasai, livestock have great value in terms of economic, cultural and social aspects. Pastoralists use livestock for subsistence, cash income, store of wealth and security. Livestock are also important assets for marriage and rituals.

The Maasai regard livestock as a source of food and as a measure of wealth and prestige. According to Santos (2010), the Maasai measures a man's wealth not by money or material possessions but by the size of his herd. A man commands high respect in the community if he owns more cattle than anyone else in the area. Bee *et al* (2002) reports that the Maasai are regarded as poor when they own less than 100 cattle or average when they own between 100 and 500 cattle. Those owning more than 500 cattle are regarded as rich. In fact cattle represent food and power; the more cattle a Maasai has, the richer he is and therefore the more power and influence he will have within his tribe. According to their beliefs, all cattle throughout the world belong to the Maasai.

Bee *et al.* (2010) indicate that the Maasai community follows a strict division of labour that is organized along age group and gender lines. The Maasai elders are those who have graduated from the Moran group and are aged over 50. The main tasks of the elders are to advise, maintain discipline and order, teach and educate the younger generations, determine the use of common resources, especially grazing land and maintain good relations with the neighbouring communities.

The lifestyle of the Maasai people has recently been changing due to increased population that has forced them to abandon the previous homeless life style and adopt permanent settlement. Though they have to move their cattle for miles in search of pasture and water, they return to their homes. Consistent drought has also reduced the number of their livestock.

Usage of Mobile Phones in Tanzania

Mobile phones are considered to be a key tool for communicating information. According to the International Telecommunication Union (ITU) statistics, as quoted by Donner

(2008), the number of mobile phone subscribers in the world has increased almost twenty-fold in the last decade. Mobile phone subscribers were estimated to be 11 million in 1990, 300 million in 1998, 4 billion in 2008, and 5 billion in 2010. In Africa, more than one in every four people has a mobile phone.

In Tanzania, the number of telecommunication providers has increased from one provider in 1990 to ten operators in 2007. However, only seven mobile network providers are in operation at the moment. These are Tanzania Telecommunication Company Limited (TTCL-Mobile), Zanzibar Telecom Limited (ZANTEL), Vodacom Tanzania Limited (VODACOM), MIC Tanzania Limited (TIGO), AIRTEL, SASATEL and Benson Informatics Limited (TCRA, 2007).

Mobile phone networks have revolutionized the communication sector to the extent that the mobile phone has become the most preferred method of communication for the majority of the Tanzanian population (Deloitte, 2006). The availability and accessibility of telephone services has improved significantly in both urban and rural areas, resulting in an increase in penetration from less than 1% in the 1990's to over 30% in 2008 (TCRA, 2008). The number of mobile phone subscribers has also increased from 110,518 in the 1990's to 2,963,737 in 2005, and 19,592,795 by June, 2010 (TCRA, 2010).

Mobile Phones and Rural Livelihoods

The livelihoods of millions in the developing world depend heavily on agriculture and small businesses. One major problem in many rural regions is poor communication facilities. This affects farmers and small entrepreneurs who generally have no way of knowing the prices before they travel to the market. They often have to rely on middlemen who take advantage of this ignorance. In particular, small-scale farmers have poor market infrastructure, as well as inadequate marketing experience and agricultural inputs (Munyua, 2007). Accurate and timely market information particularly concerning perishable items, can significantly reduce transaction and travel costs (Rashid and Elder, 2009). In Sri-Lanka for example, the "cost of information" constitutes 11% of the total cost of farmers, from the time of deciding what to grow to the time of selling (de Silva, 2008).

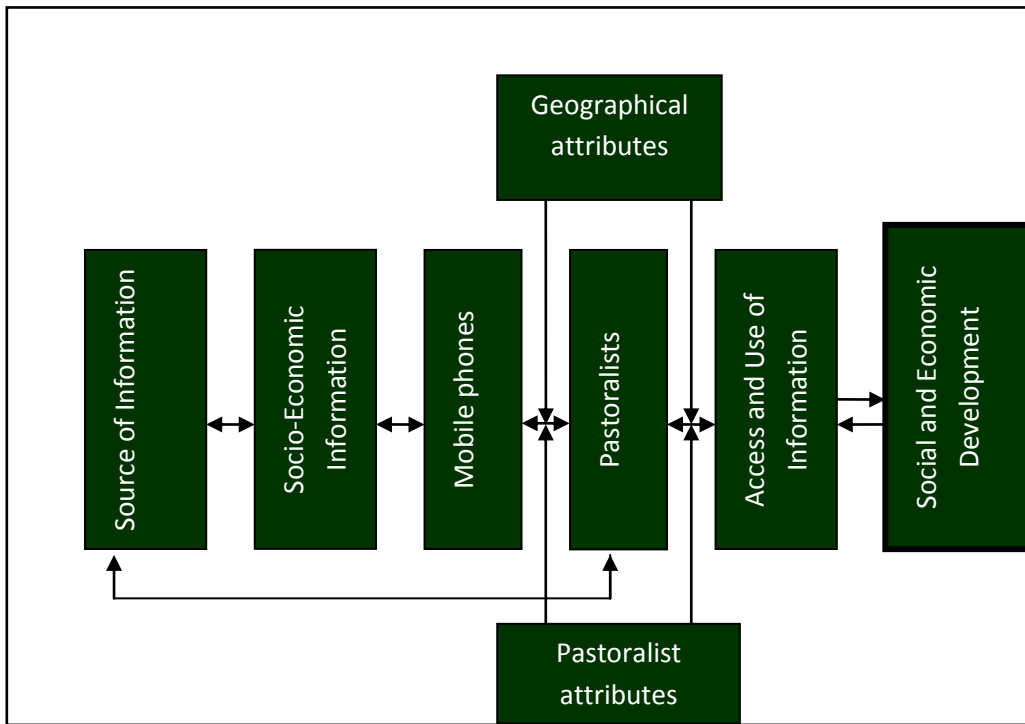
A few studies have explored how mobile phones impact the livelihoods of farmers and fishermen. Jensen's (2007) study on fish prices in Kerala, India, provides strong evidence of the micro-economic impact of mobile phones. He found that the arrival of mobile phones brought significant and immediate reductions in the price and the amount of waste in the fishing system. Sife (2010) also shows the contribution of mobile phones to rural livelihoods and poverty reduction on rural communities in Morogoro, Tanzania.

Conceptual Framework

The conceptual framework of this study was modified from David Berlo’s Model of Communication (1960). Berlo’s Model describes four components in the communication process which are Source, Message, Channel and Receiver (SMCR). The source (S) is the person who encodes the message. The message (M) is used to convey the source’s meaning by means of any of the codes. The channel (C) is the method used for carrying the source’s message. The receiver (R) is the person who decodes the message.

In the context of this study, communication is a two-way process and mobile phones are the medium (channel) by which information is passed. Socio-economic information can be sent to pastoralists via mobile phones from the sources of information, which may be extension officers, veterinarians, markets on new prices or other sources of information. Similarly, pastoralists send information and receive feedback.

Figure 1: Conceptual Framework



Source: Berlo’s communication model (1960) p. 63-72. Modified by the authors.

Methodology

The study was conducted in 2011 in Monduli District, Arusha Region, Northern Tanzania. Three villages namely Losirwa, Esilalei and Oltukai were purposively selected. These are villages populated with only Maasai herders. The researchers had to consult some Maasai elders in Monduli town to identify the villages because other villages are populated by both the Maasai and Waarusha tribesmen. The researchers selected Maasai herders who own mobile phones and a few who do not. The questionnaire, interview and observation were the main methods used for data collection.

The questionnaire covered 100 Maasai pastoralists composed of 90 who own mobile phones (60 men and 30 women). This was so because there were more men who own mobile phones than women. There were also 7 men and 3 women who do not own mobile phones.

In-depth interviews were conducted with 20 Maasai village leaders, officers and veterinarians to complement the information collected from the questionnaire. Observation was also made on usage of mobile phones, the networking infrastructure and places where they recharge their phones.

Discussion of the Findings

Demographic Characteristics of the Respondents

Social Groups and Ownership of Mobile Phones

Respondent's social groups and ownership of mobile phones is indicated in Table 1:

Table 1: Distribution of Respondents by Social groups and possession of mobile phones

Social Groups and Age	Gender	Possession of Mobile Phones	Percentage
Korianga (15-34)	M	28	31.1
Laandis (35-45)	M	19	21.1
Makaa (46-59)	M	9	10.0
Eseuri (60-79)	M	5	5.6
Yeyo (15-50)	F	25	27.8
Koko (50-100)	F	4	4.4
Total		90	100

Source: Field Data (2011)

The findings reveal that the majority of the social group with phones were the Korianga (28 or 31.1%). This is the male middle age group, who know how to operate mobile phones and are fast learning people. The same was witnessed with the female groups, where the young group of females (Yeyo, 25 or 27.8%) outnumbered the Koko group. The Ndito group (Girls of less than 15 years) were not included since no one from this group had a mobile phone).

Gender of the Respondents who own mobile phones

Table 2: Distribution of Respondents by Gender

Category	Frequency	Percentage
Male	61	66.8
Female	29	33.2
Total	90	100.0

Source: Field Data 2011

Table 2 shows that out of 90 respondents who own mobile phones, 61 (66.8) were males and 29 (32.2) were females. The majority of respondents involved in this study were males on the grounds that in rural communities males are the ones who own the economic assets of the family. They can therefore, afford to buy the handsets compared to women.

Level of Education

Table 3: Distribution of Respondents by Level of Education

Category	Frequency	Percentage
No formal schooling	51	56.7
Semi-formal education (adult Education, self-teaching, etc)	2	2.2
Primary education	28	31.1
Secondary education	6	6.7
Tertiary education	3	3.3
Total	90	100.0

Source: Field data (2011)

Table 3 shows that more than half of the Maasai have no formal education. In an interview with the Village Education Coordinator in Losirwa village, it was revealed that even those who went to primary school did not do well as some of them had to drop out of school to engage in cattle grazing.

Respondents who do not own Mobile Phones

In this study, 10 Maasai who do not own mobile phones were involved, whereby 7 (70%) were males and 3 (30%) were females. Out of the seven males, one was Korianga, five were in the Laandis group and one was Makaa. There were three women, all in the Yeyo group. In terms of education, eight of them had no formal education, one had primary education and the remaining one had secondary education.

Mobile Phone Usage

Mobile Phone Service Providers

The respondents were asked to indicate the Network Operator/ Service Provider they were using to get the services and the findings show that out of the 90 respondents, 79 (87.8%) use Airtel. The second leading operator was Vodacom with 21 (23.3%), Tigo had 7 (7.8%) and Zantel had 2 (2.2%). However, some of the respondents use more than one networking operator company, for example, Airtel and Vodacom or Airtel and Tigo and so on. Table 4 indicates network operators.

Table 4: Network Operators/ Companies

Company	Frequency	Percentage
Tigo	7	7.8
Airtel	79	87.8
Zantel	2	2.2
Vodacom	21	23.3

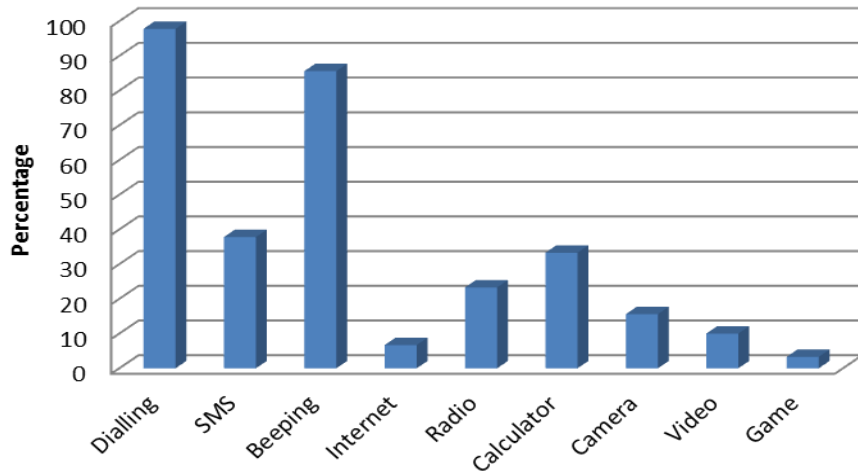
Source: Field Data (2011)

Mobile Phone Services/Options Used

The research also indicated that almost all mobile phone services are used by the pastoralists, such as phone calling, sending short messages, beeping (call and bring the call to an end before the recipient receives the call, so that he/she can call you instead), internet connection, calculator, radio, video and camera. It was however revealed that most of the Maasai make phone calls more than any other option. This is shown in Figure 7, where 88 respondents (97.8%) said they make phone calls (dialling). Again, the frequency is high in beeping, which is 77 (85.6%), where they beep so that they may be called. Other options include the use of calculator with 30 (33.3%), the radio with 21

(23.3%) and the camera with 14 (15.6%) respondents. The options which are rarely used include the internet, although 6 (6.7%) claimed to use the internet, 9 (10.0%) claimed to use the video and 3 (3.3%) claimed to use their mobile phones to play games. It should however be noted that the respondents may claim to use internet, video or play games while in the real sense, they do not, given their educational level.

Figure 2: Mobile phone options and their usage



Source: Field Data (2011)

The respondents preferred dialling the number of the person they wanted to communicate instead of writing SMS due to the fact that many of them do not know how to read or write as indicated earlier. This was also commented by the Village Officer of Losirwa who observed that “*Most of us Maasai dial the number of the person we want to communicate with than writing messages because the majority of us did not go to school*”.

Photo 1: Maasai using mobile phones



Source: Field Data (2010-2011)

The role of mobile phones in facilitating communication for socio-economic activities

The respondents were asked to indicate what they considered as the role of mobile phones in facilitating communication, and the results are as shown in Table 5.

Table 5: The role of mobile phones in communication for socio-economic activities

Role of mobile phone	Frequency	Percentage
Use of mobile phones to access market information especially cattle prices	63	70.0
Use of mobile phones to communicate with veterinarians in the case of animal problems	63	70.0
Use of mobile phones to communicate with neighbours especially in the case of emergencies	79	87.8
Use of mobile phones to access information on the best methods of keeping animals	46	51.1
Use of mobile phone to access information on the area with green pasture for grazing	77	85.6
Use of mobile phone to send or receive money and other business transactions	21	23.3
Use of mobile phones for general communication to reduce transport costs, hence saving money and time	89	98.9
Use of mobile phones to improve relationships and contact with friends and relatives	82	91.1
Use of mobile phones in social activities such as marriage ceremonies, burials, meetings and religious activities	77	85.6

Source: Field Data (2010-2011) Note: N= 90. There were more than one response.

The results from the study revealed that mobile phones were used to access market information, especially the prices of livestock. Out of 90 (100%) respondents with mobile phones, 63 (70.0%) said they use mobile phones to access market information, which includes the latest prices of cattle. If it is high the pastoralists will go and sell his livestock, but if the price is low the pastoralists may go and buy livestock.

The Maasai have different markets for livestock which are held in different places on different days. They usually move from one livestock market 'mnada' to another to buy or sell their cattle. Before going to the market, they tend to ask their friends about the prices at the market, using mobile phones. This was also confirmed by the Village Executive Officer of Esilalei, who said: "We use mobile phones to ask those at the market for the average prices of the cattle so as to go to buy or sell cattle." This Officer is also engaged in the business of buying and selling livestock.

As indicated in Table 5, another 63 (70.0%) respondents use their mobile phones to communicate with veterinarians in cases of animal problems. This was also supported by those who do not own mobile phones as they confirmed that they borrow mobile phones of their friends or relatives to communicate with veterinarians when their livestock have problems. Another 46 (51.5) also contact veterinarians for seeking advice on best methods of keeping animals.

The results from the study also revealed that mobile phones were used to call neighbours in case of emergencies. The data in Table 5 show that 79 (87.8%) respondents use their mobile phones to call neighbours in the case of emergencies, not only when attacked by cattle rustlers but also when attacked by wild animals like lions. For example, the Village Officer of Losirwa village said that a lion once attacked livestock in Losirwa village, but by using the mobile phone he managed to spread the news, so that about 200 warriors (Moran) came, surrounded the lion and managed to kill it. This shows that mobile phones are very useful devices for dealing with emergency situations.

Mobile phones also played a very important role in accessing information on the area with green pasture for grazing. As shown in Table 5, a total of 77 (85.6%) respondents confirmed using their mobile phones to find out from their friends in different areas whether there was enough pasture and water so that they may migrate their livestock to those areas. Information on areas for grazing is very important for the Maasai especially during dry season.

Mobile phones were also used for financial transactions, particularly sending and receiving money and in business transactions as confirmed by 21 (23.3%) respondents. They said they use the service to send money to their relatives who live far away as well as to their children studying in boarding schools. Some also receive money using this system which has proved to be very convenient.

As presented in Table 5, a total of 89 (98.9%) confirmed that mobile phones play an important role of reducing transport costs through saving money which would otherwise be used for travelling. They said phone calls help them to solve problems without necessarily seeing each other.

Related to this function was that mobile phones help to improve relationships and contact with friends and relatives, as shown in Table 5 where another 82 (91.1%) said mobile phones help them to communicate with their friends and relatives to enquire about their health and how they are doing. Again, this reduces travelling costs.

It was also indicated that mobile phones help to improve coordination of social activities such as marriage ceremonies, burials, meetings and religious activities. As shown in Table 5, 77 (85.6%) respondents out of 90 confirmed that mobile phones make it easier to bring people together by calling them than before when someone had to walk several kilometres to spread the news. Despite all these basic roles facilitated by mobile phones in the Maasai land, there are also some constraints encountered. These are discussed below.

Constraints in the Usage of Mobile Phones Among the Maasai Pastoralists

Network Problems

One of the constraints encountered was that of network as characterised below:

Table 6: Network Related Problems

Variable	Category	Frequency	Percentage
Network problems	Yes	79	87.8
	No	11	12.2
Call drop in the middle of conversation	Yes	75	83.3
	No	15	16.7
Network failure	Yes	76	84.4
	No	14	15.6

Source: Field Data (2010-2011)

Table 6 indicates network associated problems in the Maasai areas where the study was conducted. In fact, this is a major problem in many rural areas in the country. The network problem is so severe to the extent that in some places when one wants to make a call he/she has to move to a higher spot such as a hill, to get connected to the network.

Photo 2: Mobile phone infrastructure in Esilalei village



Source: Field data (2011)

Lack of Electricity

It was observed that there was no electricity in all the three villages visited. In Losirwa and Esilalei villages, they go to Mto wa Mbu and Kigongoni business centres (about 15 kms), where there is electricity to charge their phones. Those in Oltukai said they usually go to Minjingu town (about 10 km) for charging their phones. Some few residents however, had solar powers and generators. One respondent with solar power said he can recharge up to 16 mobile phones in a day. For a man with solar energy this could be another source of generating income.

Language Barrier

Language barrier is another constraint which the pastoralists are facing in using mobile phones. A total of 73 (81.1%) indicated language barrier in using the phones.

As indicated earlier, the Maasai are pastoralists and in the previous years, many of them did not go to school. The instructions given in English language restrict the use of mobile phones.

Lack of Vouchers in the Villages

The availability of vouchers or air-time scratch cards in the villages is another constraint. There are no agents in the village who sell vouchers in all the three villages. One has to

walk to the business centre to buy vouchers in the same way as when one wants to recharge the mobile phone battery.

Conclusion

In the light of the findings, it can be concluded that mobile phones are the most useful ICT devices for rural communities and isolated people like the Maasai. It should be remembered that the Maasai live in isolated areas and are very scattered. They used to walk many kilometres to deliver information from one place to another. The arrival of mobile phones has made communication easier and more successful. Information which do not need face-to-face communication can easily be communicated through mobile phones.

Mobile phones help even the pastoralists who are in grazing areas to keep in touch with their families and relatives. The phones are used to coordinate people and social activities like marriages, burial ceremonies, meetings and the like.

Generally, mobile phones have been warmly received by the pastoralists, many of whom possess them. Even those who do not have mobile phones, when interviewed, said that they are good devices, and would like to obtain them.

Recommendations

Based on the importance of mobile phones for socio-economic development in the Maasai area, the following recommendations are made with a view to improving the usage of the phones:

The air-time cost should be reduced as it is very expensive when communicating with someone who is using a different mobile phone company, such as from Airtel to Tigo or Vodacom. The cost of phoning different companies should be reduced, just like it is when one calls someone of the same company.

The network infrastructure should be improved to resolve the network problem. It is suggested that network infrastructure be located in such a way that all villages will be reached. With the government's decision to use digital information transmission instead of analogue towards the end of this year, it is expected that this problem will automatically be solved.

Electricity supply in rural areas is another service that needs to be looked into. Given the costs involved however, the question is the extent to which the government is able to provide them with electricity. As such, solar and wind energy sources may possibly be the

right option for the time being. The Maasai are rich people, and can afford these alternative sources of energy, with proper awareness and guidance.

The problem of non availability of vouchers in the villages was mentioned by many pastoralists. They suggested that there should be Agents in the villages for selling vouchers. This is an initiative that can be implemented by the villagers themselves under their village administrative units.

Mobile phone companies should help pastoralists on how to access and use all relevant mobile phone options. The training may include, for example, how to write, send and receive messages, how to use the calculator, radio, camera, and other relevant options. More important nowadays is how to send and receive money. This is very important in view of the fact that the Maasai live in isolated areas where no banking services are provided. These activities could be carried out on market days or during festivals that attract large number of Maasai people at a time.

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