The role of ICT adoption in promoting livelihoods in Eastern Africa: Evidence from Uganda.

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Abstract

Information and Communication Technology (ICT) could play a pivotal role in the dissemination of agricultural technologies in Eastern Africa. In this study, we analyse the role of agricultural ICT and services in driving adoption of better agricultural technologies and practices by smallholder farmers in the Teso region of Ugandan. In turn, we analyse how adoption of ICT could impact on livelihoods, food security, and market opportunities.

We implemented a Randomised Control Trial (RCT) in which mobile phones were randomly provided for basic ICT training and access to information about good agricultural practices, nutrition security and market access via SMS services to a sample of farmers. Woman accounted for 60% of the sample.

Preliminary results suggests that the provisions of mobile phone, if coupled with training on how to access relevant information have a positive impact on the livelihood status of the farmers. Women farmers seem to have a higher positive impact of the combined program of providing mobile phones plus training opportunities.

Keywords: Information and Communications Technology, Agriculture, Technology Adoption, Uganda.

JEL Codes: O330 Technological Change: Choices and Consequences; Diffusion Processes. Q120 Micro Analysis of Farm Firms, Farm Households, and Farm Input Markets. Q160 Agricultural R&D; Agricultural Technology; Biofuels; Agricultural Extension Services

1. INTRODUCTION

Agriculture plays a very important role in the social and economic development of most African countries and the East African region is no exception. The sector not only contributes to a large share of the national Gross Domestic Product (GDP) and employment creation but is also a source of foreign exchange earnings. Africa relies heavily on agriculture. In 2014, agriculture made up 17.3% of the nominal GDP of Sub-Saharan Africa (SSA) and contributing to more than 40% of GDP of several East African countries (World Bank, 2017). Farmers in SSA countries often live in poverty. Improving their lives is important to a country's GDP- a report by the World Bank pointed out that on an average, growth in agriculture is at least twice as effective in reducing poverty as growth outside agriculture (World Bank, 2008). Smallholder farmers, defined as those that earn their incomes from small plots of land or livestock holdings, play an important role in increasing food security and the availability of nutritious foods, contributing to sustainable agricultural intensification and economic development (FAO,2017). Smallholder farming, which represents an estimated 80 percent of all farms in SSA is also a source of stability for rural communities, as it provides a source of food, regardless of economic conditions, and can be used in reciprocal relationships within the community (OECD/FAO,2016).

Information and communication technologies (ICTs) is an innovation which has the potential to transform business and government in Africa, driving entrepreneurship, innovation, economic growth, and the agricultural development of the continent. ICTs, especially mobile phones, have revolutionized communication and knowledge access in Africa. Information and knowledge are considered prime productive resources and play a key role in ensuring food security and sustainable development of the region (Yonazi, 2012).

ICTs comprise three separate words – information, communication, and technology. Information is described as any kind of message; written, audio, visual or audio-visual through which a person gets knowledge about a new person, place, thing, situation, or environment. Similarly, communication is the way of transferring such message to others which needs a medium, a clear message, and sender and receiver. Information & communication technology is the use of modern technology to aid the capture, processing, storage and retrieval, and communication of information, whether in the form of numerical data, text, sound, or image (Rahman, 2008). ICTs are generally defined as a combination of activities that enhance capture, storage, processing, transmission, and display of information by electronic means. ICTs bring about considerable opportunities to reduce poverty amongst rural communities and facilitate job creation. Rehman (2008) further adds that ICTs enable farmers access to better market information, create market opportunities and reduce transaction costs. These processes are expected to allow rural farmers realise better market margins and increase their livelihood. ICTs are critical in agricultural development because they are tools for communication between stakeholders, and they serve as channels for assessing trends and shaping decisions. Agricultural ICTs improve the ability of rural farmers to obtain information for sound decision-making, and assist farmers in identifying potential buyers and purchase of inputs in rural markets (Auma *et al*., 2017).

ICTs can offer smallholder farmers the opportunity to create networks with other farmers, obtain market information, and access information (IFAD, 2008). Due to their potential, and the recent surge in mobile phones ownership throughout SSA, ICTs have become an important consideration for social and economic development programs. While cell phones are an increasingly important source of information,

ICTs such as radio, television, and, to a lesser extent, computers, are also sources of information for smallholder farmers throughout rural SSA and could foster networks and support systems among smallholder farmers (Oluwatayo, 2014: May 2012; Munyua *et al*., 2009; Wasserman, 1994). Findings from across the continent indicate the importance of ICTs for smallholder farmers. Angello, 2015 found that ICT use among smallholder farmers in Tanzania was prevalent, with more than 90% reporting mobile phone use. In South Africa, findings indicate increased ICT use could foster virtual business opportunities (Masutha, 2015).

ICTs are considered drivers of change for rural and agricultural development. They are efficient tools for reaching rural and remote communities and improving agricultural productivity (Richardson 1997). ICTs can speed up the extension of development services in areas such as healthcare, education, and agriculture (Van Audenhove, 2003). ICT help strengthen partnerships and provide a framework for shared learning and have led to increased use of networked information environment and development of platforms for better sharing and exchange of information and knowledge. This has helped to achieve competitiveness. Although a networked information economy cannot solve poverty, hunger, and disease, it provides new avenues for offering a more attractive cultural production system, tapping economic opportunity, and sharing and disseminating scientific outputs and innovative linkages between farmers, scientists, and other actors (Benkler, 2006).

The objectives of this study are to analyse the adoption levels, barriers, and opportunities of small and marginal farmers with a special emphasis on women farmers accessing ICT especially mobile phone messaging in accessing information on GAP (Good Agricultural Practises), food and nutritional best practises, post-harvest handling and developing market linkages. The study investigates existing barriers for ICT adoption**,** including physical (e.g., financial constraints) and behavioural barriers. In turn, we look at the impact of, facilitating and promoting ICT use, in increasing the market opportunities and the bargaining power for farmers to create fairer and diversified market linkages, create equitable access to knowledge of GAP and equitable access to knowledge of food and nutritional practises.

Use and adoption of ICT in rural Africa are beset by various challenges. A study by Sennuga *et al*., (2020) in Nigeria shows that the most noticeable constraints limiting smallholders' use of ICT devices are: language barrier (91.1%), low level of formal education (85%), unavailability of ICT devices (79.6%), high cost of ICT devices (72.9%) and extremely low income of smallholders (68.4%). Other constraints facing smallholders' use of ICT devices including lack of ICT centre signal in the area (65.5%), poor benefits of using ICT (57.1%), insufficient awareness of the importance of ICT in the area (49.7%) and lack of ICT training centre in the area (38%). This further validates the notion the smallholders in rural developing countries are constrained by different factors, which prevented them from getting access to timelier and better-quality information on products and inputs as well as facilitating technology adoption among farmers (United Nations, 2004). Chete and Fasoyiro (2014) conducted a study on the impact of ICTs-Based Initiative with mobile phone on market access by women farmers in Nigeria and found that the roadblocks and challenges to developing rural ICT facilities for farmers included lack of content for rural society, human resource capacity, coordination weakness, strategic coordination, risk of investment and poor rural infrastructure.

The rest of this paper is organized as follows. The next section provides a brief description of the background information of the study followed by the succeeding section which presents the methodology of the study design. In section 4, the preliminary results are discussed, while section 5 winds up with the conclusion.

2. BACKGROUND

Uganda was chosen as the study site as agriculture is an important component of the country's Gross Domestic Product (GDP) whose contribution is approximately 37% to the national revenues (PWC Uganda, 2016). The agriculture sector in Uganda is made up mostly of smallholder farmers that own small plots of land, except for the northern region of the country, which has a pastoral system of farming wherein the lands are owned and controlled by large groups of community farmers. Traditionally the cash crops cultivated include coffee, cotton, tea, cocoa, tobacco, and sugarcane, with non-traditional crops, such as maize, rice, beans, soyabean, and oil palm, becoming increasingly important (UBS, 2019).

The data collection was undertaken in the sub-counties of Kalaki, Orungo and Obalanga, which are in the Teso region of Eastern Uganda. Kalaki is located on coordinates 1'47'83'' N and 33'20'30''E, while Orungo on 02'00'57''N and 33'27'25'' E and Obalanga on 02'16'59''N and 33'32'59''E. The population of these districts together is 178,100 with an almost equitable female: male (51:49) gender balance(UBS,2019). The major crops grown in these districts are rice, maize, sunflower, sorghum, groundnut, soyabean, sesame and cassava. The annual average rainfall of Kalaki and Kapelebyong districts are 282 mm and 278 mm which are spread out over two seasons, the long and short rains;the short rains fall from April to May while the long rains fall from September to November. These districts are intervention network sites for Self-Help Africa (SHA) and TruTrade (TT), which were our partner organisations working in Uganda. Self Help Africa is an NGO implementing agricultural and rural development projects and TruTrade Africa is a social enterprise providing smallholder farmers with a reliable route to market and fair prices for their produce. The two organisations have active livelihood projects that are running currently in the country since the last 15 years.

Figure 1:The map of Uganda showing the sub-counties selected for the study.

3. METHODOLOGY

We conducted a Randomized Controlled Trial (RCT) in the selection of the respondents for the use of mobile phones. A Stratified Random Sampling design was used wherein the samples were divided into subgroups based on the similarities to each other and allotted to treatment and control groups. The study covered 225 participants (125 Treatment and 100 Control) who were randomly selected from a sampling frame provided by the partner agencies. This sample size was sufficiently large and diverse to represent the target households of interest. 150 farmers were randomly selected from SHA sites and 75 farmers randomly selected from TT sites, respectively. Sampling of research villages would ensure that the selected farmers are all in one village such that a control village will be an adjacent one allowing sufficient distances from each other not to create overlap of treatments. The partner agencies in Uganda, SHA and TT provided their data bases consisting of farmer contact telephone, farmers group names, villages, and sub counties. The data was collected over two waves in 2021: the first baseline survey from February to August 2021 and the follow up evaluation survey from September to December 2021.

From this database, a random selection of the research farmers was done and cleaned using contextual information like ease of access of the selected farmer, willingness to participate in the study and past relationships with ongoing project interventions. The data were collected by 20 trained enumerators using survey instruments that were pre-tested before the start of the main survey. The interviews were conducted in the native Ateso dialect and later the responses were translated into English wherever necessary for the purpose of the research. Before starting the interviews, the enumerators explained the purpose of the survey to the respondents and stressed that participation was voluntary. Consent of each respondent was obtained orally, given that some of the surveyed farmers were illiterate. Using this approach and the accompanied baseline survey done for the entire cohort of participants, half of the farmers were randomised to receive a Smart Phone at baseline (intervention group).

The schematic progress overview of the study progress is presented in Figure 2.

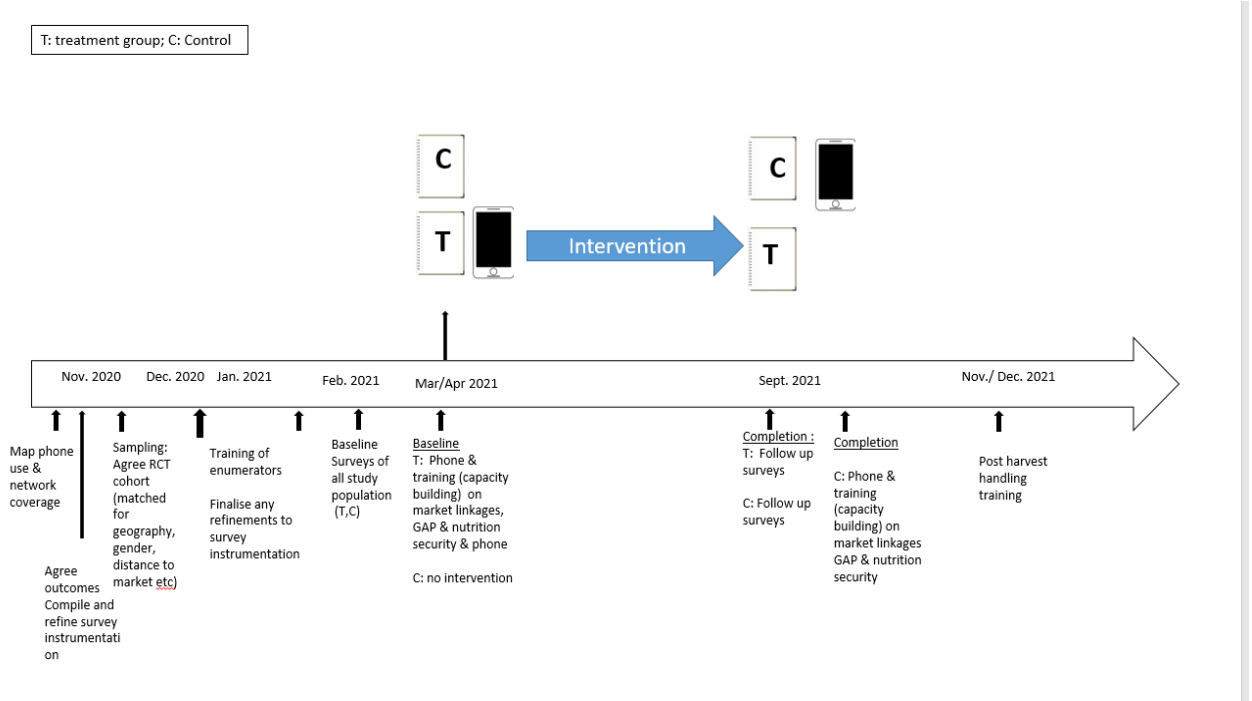

Figure 2. Schematic overview of the Study progress

The sampling exercise started with the mapping of the phone usage as well the network coverage of the villages in Kalaki and Kapelebyong selected for the exercise. Phone usage and phone network were excellent for the villages that were selected as the partner agencies were already providing digital market connect services in the selected areas where farmers are paid through Mobile Money services since 2019. The mobile platform Wesource, was used to send out messages as well as to register farmers and in the selected study area. It is estimated that about 70% of the farmers have access to a mobile phone in the two districts. However, many of them use basic phones and not digital smart phones and thus was feasible for the study because all the messages which were to be transmitted to the farmers could be received by analogue phones and not necessarily digital phones.

The sampling procedure adopted was matched for the geography of the area as well as gender, distance to markets and the ease of participating in the survey as well as their experience being part of such interventions. A baseline survey was conducted among all the 225 farmers participating in the survey through face-to-face contact and eliciting responses from them regarding the various demographic characteristics and other related queries required for the survey. The anonymised survey questionnaire had four main sections: demographic characteristics such as information about age, education, gender, and occupation, cropping systems, individual use of the mobile phone for agriculture information access and questions on perceived ease of use, usefulness, efficiency and intended future use of the system, use of ICT and the sources of information on agriculture, food consumption. dietary diversity patterns, food security and perceived usefulness, behavioural questions on risk, optimism, ambiguity, and time preferences system were measured using Likert Scales adopted from (Shroff, Deneen, & Ng, 2011).

Despite disruptions brought by the pandemic, the data collection was completed successfully for the two data collection rounds, since at that point in time the Covid 19 regulations were relaxed as there was less occurrence of the pandemic. On completion of this activity, analogue mobile phones were handed over to the 125 Intervention (treatment) farmers and capacity building exercise were carried out on aspects of GAP, Nutrition Security and Market Linkages. The control group of farmers were left without a phone.

Following this phase, a series of 33 Short Messaging Services (SMS) on topics like paddy and groundnut agronomical practises from seed to harvest, food and livelihood security, breast feeding, hygiene, complementary feeding and Covid 19 control measures were send out to the phone possessing treated group farmers (see Table 1). The phone messages were sent out over a period of two months in the local dialect Ateso. All the messages of agricultural nature were done in a timely manner well ahead of the agriculture activity supposed to be carried out by the farmer so as not to miss the operation. Non-agricultural messages were sent out as part of the routine schedule and Covid 19 messages which were not part of the original schedule, served as a useful reminder for the farmers to take necessary precautions against the pandemic. The details of the various messages which were sent out is detailed in Table 1.

S.No	Theme of message	No of msgs.	Days of delivery
1	Food and Livelihood Security	4	21st June 3rd ,9th and 12th July 2021.
2	Breast Feeding	3	22nd June 6th and 7th July 2021.
3	Other campaigns(Children and vulnerable persons care)	1	6th July 2021.
4	Hygiene	2	5th and 7th July 2021
5	Complementary feeding	1	7th July 2021.
6	Paddy(Rice)-Seed to Post harvest	3	24th June 3rd and 12th July 2021.
7	Groundnut-Seed to Post harvest	8	15th,16th,19th,21st,23rd,24th,27th July 8th Aug.2021.
8	Covid 19	8	8th June28th,29th,30th July 8th,13th,16th,17th Aug.2021.
		30	

Table 1: Details of the text messages shared through the mobile phone

From the above table we can infer that Agricultural message topped the list, as farming is the main occupation of the villagers with Paddy and Groundnut being the major crops grown during the season and timely information on seed, planting, nutrient, pest and disease and post-harvest management could provide useful hints for better farming operation for maximising returns. Health care messages on the Covid 19 precautions provided timely interventions for basic health and hygiene in the community. Nutritional messages on feeding, food, and livelihood security as well breast feeding was useful for the female members and other health prone disease vulnerable people in the area.

A follow up evaluation was part of the exercise to get the feedback of the treated and control group of farmers on their opinions on the content, tone, clarity, relevance, and length of messages as well as suggestions for improvement in the quality of the inputs. The follow up evaluation survey dealt with the farmers' opinions on the phone messages on GAP of rice and groundnuts, food and nutrition, market linkages and Covid-19. Following up on the evaluation feedback, a capacity building training exercise was conducted for the Control group of farmers who had missed this opportunity in the first instance. The topics covered were the same as in the initial programme, GAP, nutritional security, and market linkages. Mobile phones were also handed over to this group of farmers to enable them to reap the benefits of the technology.

4. PRELIMINARY RESULTS AND DISCUSSION

In this Pilot Project, the efficacy of mobile phone as a tool of receiving agricultural, nutritional, and related information was assessed among the small farmers, with women being a critical component of the study. Preliminary results suggest that because of the mobile phone intervention, some positive outcomes have been mentioned by the respondents of the study. Some of them were following timely agronomical practises like planting, fertilisers and herbicide application in Groundnut and Rice and able to follow the correct post handling measures in storage of crops to prevent pest infestation. On the nutritional side, the messages on balanced diets helped women prepare meals in correct proportion to the requirement of their infants. Market linkage messages helped farmers in finding the right market for selling the produce while messages on Covid 19 prevention helped farmers in following the health protocols and prevent infection.

A study performed in Uganda proved that most of the respondents (87%) use mobile phones for getting access to agricultural inputs like seeds, livestock, and pesticides from local dealers, agricultural training and capacity building, governmental and non-governmental agriculture extension agents and community members. Coordinating access to agricultural inputs was found to be the leading agricultural use of mobile phones, due to the direct impact that access to these very important inputs has on livelihood stability, productivity, and profitability of the farmers. The second most important cited agricultural use of the mobile phone, indicated by 70% of respondents, was accessing market information. Accessing market information comprised of using the mobile phone to contact local farmer associations and buyers, friends, or family in other geographic areas who have access to different markets. Use of the mobile phone for monitoring financial transactions was mentioned by nearly 54% of the respondents. Monitoring financial transactions includes consulting with lenders on availability and guidelines of financial loans needed for farming operations. Approximately 52% of respondents mentioned the use of the mobile phone for consulting with expert advice from non-governmental and governmental agriculture extension agents. Farmers agreed to the various benefits of the mobile phone like information being relevant and useful, to check on new content and indicated access to banana production information as the highest perceived benefit (Martin and Abbot, 2011).

According to another study conducted by Karamagi and Nalumansi, (2009) in Uganda, it was inferred that usage of mobile phones by many dairy farmers in the Bugerere District provided information advantage and efficiency as farmers were travelling longer distances to the main market in the capital, Kampala, searching for buyers at the market which often left the farmers with thousands of litres of unsold milk, which would inevitably spoil and become worthless and lead to loss of their produce. However, after the adoption of mobile phones, the farmers began using them to connect to Food Net, a service that supplies up-to-date price information for agricultural commodities, as well as contact details for interested buyers via SMS.

Research conducted by Muto and Yamano (2009) in Uganda, showed that information flows improved among banana farmers following expansion in mobile phone coverage leading to increase in production income per household of the targeted areas. The results suggest that network expansion increases banana income in remote areas. In another review, the use of mobile phones by a small sample of farmers in Morocco inspired market orientation and diversification from low-value crops into higher-value enterprises with corresponding increase in income by 21 per cent . As a result, farmers started to deal directly with wholesalers, and went searching for better markets and improved the incomes from their enterprises (Ilahiane, 2007).

Casaburi et al., 2013 demonstrated through their study in Kenya that sending text messages with agricultural advice to smallholder farmers increased sugarcane yields by 11.5% compared to the control

group. These results are mainly evident among farmers who had little or no agronomical capacity building and had little interaction with sugarcane company field level officials and this intervention generated large returns for the contracted farmers and thereby profits for the sugarcane company. In the same study, it was reported that enabling farmers to report input provision delays through text messages to the company reduces the proportion of delays in fertilizer delivery by 21.6%.

An observation made by Tinzaara et al., 2020, tried to establish how the mobile phone Viamo's 3-2-1 service hosted by Airtel Uganda Farmers ,indicated that the four most sought after information elements for increasing banana productivity included material on weather forecasts, pest and disease control, fertilizers and their usage, and markets and their location. The study reveals information gaps with respect to pests and disease diagnosis and management, market prices, weather information, mulching and weeding in different terrains, and sources of clean banana planting material.

The content of the messages of the SMS sent out to the participant farmers varied from asking farmers to consume nutrition food and giving preference to locally grown food. The dietary diversity needed for pregnant and breast-feeding women and the benefits of breast feeding to the infants as well as importance of hygiene to children and other members of the family were highlighted. Agricultural message contents emphasised on ways of improving farming practises to increase yields and profits of the farmers (Appendix 1).

Farmers who had accessed information were asked to indicate the agricultural, nutritional, market and post-harvest and related services that was accessed through the mobile phone messages which were beneficial to them. The table below presents a snapshot of the comments from farmers .

Heath improvement, timely planting, increased income from farming
Ground nut and Rice-Good agronomic practices, right post harvest handling,Covid-19 prevention
Health improvement, income generation through better markets.
Timely planting and application of fertilisers for rice
Groundnut-Was able to do proper storage preventing insect attacks
Health improvements, good market prices and secured planting materials through storage
Improved hygiene at home, timely planting.
To guard against the future through better drying and storage(food security).
Health improvement, food storage and better farming methods.
Gained more knowledge about nutrition of children.
Learnt about staying away from big crowds, wearing face masks and maintain distancing
Rice-managing weeds on time, planting spacing as recommended
Gained more knowledge about the aspect of pregnant mothers to not consume alcohol during pregnancy and breast feeding
Covid prevention-guidelines sent to us telling us to put on masks maintaining social distance
Gained knowledge in messages about covid19,infant nutrition, groundnut agronomic practices etc

Table 2. Feedbacks of the famers on the SMS received.

The preliminary feedback from the farmers who received the SMS on their mobile phones and accessed the information ranged from knowing about better farming practises in groundnut and rice, able to sell their produce in the right markets as well as post-harvest techniques to reduce wastage of their harvest. Other non-agricultural benefits mentioned were accessing better health services, knowing about the Government Covid 19 health protocols, improved hygiene at home and in the surroundings and information on breast feeding and infant nutrition.

In a research investigation carried out in Tanzania it was established that the most common topics cited by respondents, which they attributed while receiving an SMS, was scouting, and monitoring for pests in the crop (40% of respondents) and improved land preparation (21%). SMS from mobile phones were reported to be the most preferred source of information (58%) followed by extension officers and own experience each being cited by 12% of respondents. When asked what additional information farmers wanted to receive, the most common requests were for information on general maize production, information on other crops, markets, land preparation and crop production with additional farm inputs and weather information in that order. The study further reported that while most of the SMS dealt with routine good agricultural practices, the messages about stalk borer alerted farmers to a problem in real time and recommended a clear course of action that they could implement. This observation may provide evidence that SMS are especially relevant, and farmers are especially receptive to, messages that convey urgent information about pending threats and what they can do to save their current crop (Karanja *et al*., 2020) .

In another study analysed by Sennuga *et al*., (2020),the outcome indicated that the majority (89%) of smallholder farmers indicated they experienced an increase in crop yields due to the availability of credible information through SMS text reminders received fortnightly. Findings indicate that because of the SMS text reminders received fortnightly and the subsequent adoption of 13 GAP technologies, their agricultural output were on the ascent This result implies that provision of reliable information through SMS text reminders may increase the agricultural productivity of smallholder farmers.

5. CONCLUSION

Preliminary results of the study are very encouraging especially in relation to women participating in the study. The project was successful in engaging with a significant number of female farmers – e.g., of the 225 participants at the training sessions, 130 were females. It was found that when adoption of mobile phone technology was paired with training on how to access to information, the impact on the livelihoods was good, especially in the case of women farmers. For a pilot project, the number of farmers reached has been significant (n225), with all these farmers also benefitting from a series of capacity building training e.g. good agricultural practises, market and small business marketing, post-harvest handling of crops and gender action learning systems.

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Appendix :

S.No	Topic of message	English	Atuso
1	Food and livelihood security	Ensure you and your family eat locally available foods from the different food groups at every meal and throughout the day i.e., energy giving foods e.g., posho, cassava; protective foods such as fruits like mangoes and vegetables like Sukuma wiki and body building foods such as fish, beans, soya, meat. Dietary diversity is very critical for pregnant and breastfeeding women, yyoung children (6-24 months) and adolescent/young girls (10-19 years) as their nutritional requirements are much higher.	Koany ebe ijo ka ekalekon inyamete inyamat lupo ejaas atutubet kus kokodeta luka inyamat luegelegela kangin apak naka ainyam ido apaaran kere, apolouke, inyamat luijaikinete akuan agogong kwape nat euga, emuogo; inyamat lueyuaritos akuan kwape nat araito kwape emiebe ka idiasio lukwii kwape esukumawiki ka inyamat luedukete akuan kwape nat agaria, emaroge, esoya, akiring. Inyamat luegelegela luinyalinyala kes epolok noi kanu angor nuepotiete ka nuitanakete, idwe ludidik (ilapio 6 toni 24) ka atumunak/apesur nudidik (ikaru 10 toni 19) naarai ikeara noi eipud kec loka ainyam naejok.
2	Breastfeeding	Breast feeding of baby should be done immediately with one hour after delivery. The first yellow milk protects your baby from illnesses while immediate breastfeeding helps baby/mother bond and helps your baby to learn how to feed before he/she is hungry	Aitanak imukeru nes ekoto kiswamai atipet noi kotoma osawa ediopet losodit akaulo na aidoun. Akile nudos nusodit nukokisin kes eyuarete imukerukon kanejaas adekasinei ido aitanak naitarasikina atipet nes ingarakini ikoku/toto arucokin ka aingarakin imukerukon aisisiaun ainak duc eringa ngesi kepupuno etengei.
3	Food and Livelihood Security	Backyard gardening should be practiced at household level as it	Akoru idiasio ka icie inyamat eiduny ka ere nes

		ensures continuous supply of food even during hunger gaps (out of season)	ekoto kiswamaete koreria naarai einakini inyamat ajaut apak kere karaida apakio nuka aoror nue-jaar etengei (kinga naka apak na akoru).
4	Hygiene	Washing hands with soap and water SHOULD be done at critical times including before preparing and eating food; before feeding your infants, babies, and children and after using the toilet or latrine	Ailot akanin kasabunyu ka akipi nes EKOTO kiswamaete duc kapakio nuepolor eipud, aimoriarit apak na aipo ka ainyam inyamat; eringa itanyama idwe kon ludidik, imukerun, ka idwe ka akaulo na aitwasam acoloni.
5	Complementary Feeding	Additional foods must be introduced gradually after the 6 complete months, while ensuring that the precaution aspects are adhered to	Ekot aitegear ikoku ainyam luce inyamat da kanu aingarakin akile nu ekisin akaulo na ngesi aileleb ilapio 6 luapolou, konye kojai aanyun ebe etupitai acoit naipudai.
6	Groundnut Seed shelling	Hello farmers, please hand shelling seed, sorting and clean (remove; broken moulded, shrivelled, and inert matter) before planting. Never use machine to shell seed and shell when you are ready to plant not later than one month.	Yoga, akoriok, kilipit yesi aipac emaido kakanin, aisek ka aitalaun (alemanar awai emaido loiroiroit, idoge ka icieboro tai) eringa iraikina. Siri kitwasam acuuma apacia emaido loebeit araun ikinyom ido kopac kotoma apak na ikapakinor ijo aira nesi komam erai akaulo na apak naedepari elap ediopet.

Table A1. Content of messages on different topics relayed through the SMS.