Extended Abstract
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Paper/Poster Title	The role of ICT adoption in empowering livelihoods in Eastern Africa: Evidence from Teso region in Uganda.

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Abstract	***200 words max***

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 information and communication technologies and services in driving adoption of better agricultural technologies and practices by female and male smallholder farmers in the Ugandan Teso region. The overarching objective is to identify users' preferences and knowledge gaps and to detect barriers and untapped opportunities for an effective and inclusive adoption and use of ICT. In turn, we analyse how these could impact on livelihoods, food security, and market opportunities.

A Randomised Control Technique(RCT) methodology was employed in the selection of the respondents for receiving the mobile phones for studying the adoption behaviour. It was noteworthy to observe that women formed about 60% of the farmers who received the phone.

Preliminary results suggests that the provisions of mobile phone, if coupled with training in how to access relevant information e.g., on good agricultural and nutritional practises, on local market prices, post-harvest handling etc. have a positive impact on 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 Code	Q120 Micro Analysis of Farm Firms, Farm Households, and Farm Input Markets.Q160 Agricultural R&D; Agricultural Technology; Biofuels; Agricultural Extension Services see: www.aeaweb.org/jel/guide/jel.php?class=Q)

Introduction	***100 – 250 words***

Eastern Africa agricultural systems are pressurised to feed growing local populations, while supplying regional and global value chains. Yet, the region has lagged in adopting technologies to increase productivity, inclusiveness, and food security. The study investigates existing barriers for ICT adoption, including physical (e.g., financial or internet constraints) and behavioural barriers. In turn, we look at the impact of, facilitating and promoting ICT use, under three sub-themes:

1. increase the market opportunities and the bargaining power for farmers to create fairer and diversified market linkages.2. create equitable access to knowledge of Good Agricultural Practices (GAP) 3. create equitable access to knowledge of food and nutritional practices.

This study was undertaken in the Teso Region in the districts of Kalaki and Kapelebyong in Uganda. The sub counties chosen are Otuboi and Apapai from Kalaki district and Alito sub county of Kapelebyong District. A Randomised Control Technique(RCT) design was used in selection of the respondents for the use of the mobile phone. The anonymised questionnaire content related to demographics, mobile phone use, agricultural practices, food and nutrition practices and attitudes to risk. The follow up questionnaire also asked the intervention group for feedback on the study and on mobile phone usage. Currently, the data collected is undergoing quality control prior to data analysis.

Adoption of ICT in agriculture constitutes an important role in the development and implementation of agricultural technologies in developing countries. Studies conducted in Nigeria on small farmers have shown that use od SMS text reminders, participatory GAP (Good Agricultural Practises) training and follow extension services visits to farmers fields as a combination of intervention strategy has contributed to influence farmers decisions to adopt new agricultural technologies (Sennuga, 2019). Findings in the same study point out that among the barriers of adoption of improved agricultural practises, financial constraints ranked first followed by high cost of fertilisers, extreme poverty levels of farmers, high illiteracy rates, very poor Government policies, addiction to conventional farming methods, adulteration of farm inputs in that order (Sennuga, 2019).

This study will strive to analyse the adoption levels of small and marginal farmers with a special emphasis on women farmers accessing ICT especially mobile phone messaging and mobile banking, in accessing information on GAP(Good Agricultural Practises),food and nutritional best practises, post-harvest handling and developing market linkages.

Methodology	***100 – 250 words***

The Study adopted a randomised controlled trial methodology (RCT) in selection of the respondents for the receipt of the mobile phones used in testing the efficacy of the adoption behaviour of farmers for ICT for Community empowerment. In total, the study covered 225 participants (125 treatment group, 100 control). 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 intervention group received a series of SMS messages, on good agricultural practices (GAP), food and nutritional practises market linkages, post-harvest handling and Covid-19, given the pandemic. The content was derived from the information campaigns of the project partners operating at the ground and from existing public health guidance (Nutrition, hygiene, covid-19). Follow up questionnaires were collected at project end from both groups and

with the control group farmers receiving a similar phone and associated training at this project endpoint to ensure capacity building in the entire cohort.

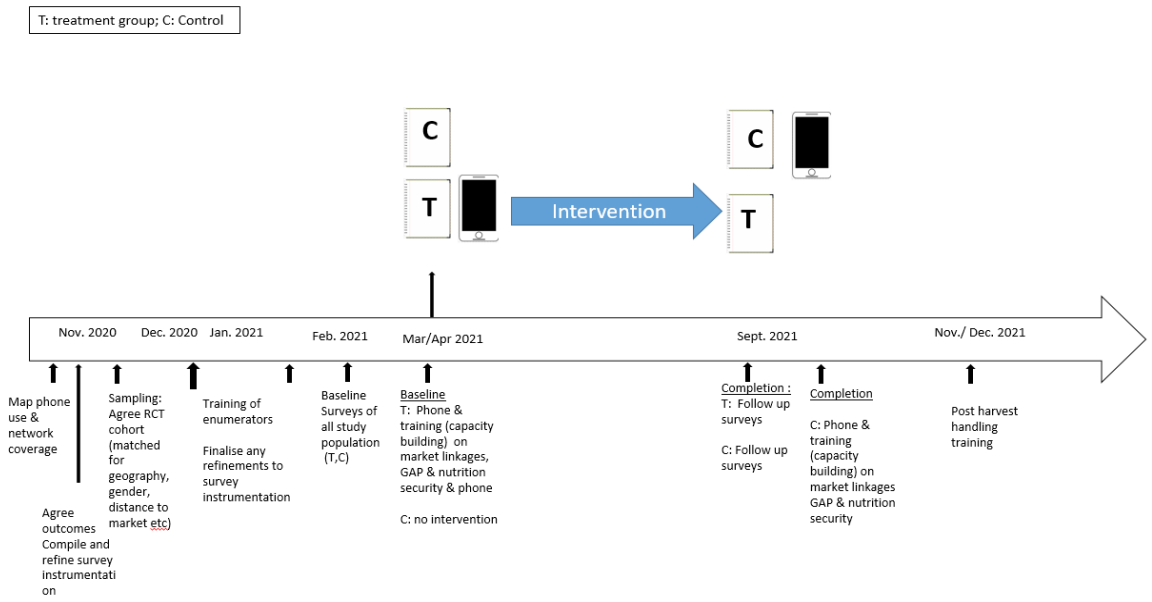

Figure 1. Schematic overview of the Study progress

Results	***100 – 250 words***

The data analysis of the two rounds of data collection is underway and will be completed by April 2021. 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.

Discussion and Conclusion	***100 – 250 words***

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.

References :

Sennuga, S.O. 2019. Use of Information and Communication Technologies (ICTs) among Smallholder Farmers and Extension Workers and its Relevance to Sustainable Agricultural Practices in, A Thesis submitted for the degree of Doctor of Philosophy (PhD), Coventry University, United Kingdom.