

# Use of mobile phones in agricultural marketing in Ghana and Uganda

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## Abstract

The performance of local markets plays a decisive role in promoting economic growth and reducing poverty in Africa. An important question is whether there is infrastructure for farmers to find information on potential buyers and prices offered. New market information services based on mobile communication technology provide opportunities to linking buyers and sellers efficiently, thus improving opportunities to reduce poverty.

One goal of this study was to examine how small-scale farmers in Ghana and Uganda use mobile phones to obtain market information. Similar farm-household surveys were carried out separately in northern Ghana (1290 households) and Uganda (1440 households) in 2011-2012. Each household was visited by an enumerator collecting information on household's demographic characteristics, assets, marketing patterns and incomes. The data were summarized and analyzed statistically.

The median share of crop production sold was 38% in Uganda and 34% in Ghana. In Uganda only 14% did not sell any crop products whereas in northern Ghana the proportion was 28%. The results suggest that surveyed farm-households in Ghana and Uganda had a good choice of buyers for their agricultural products. Most respondents (55% in Ghana and 68% in Uganda) indicated that the buyer was selected based on the best price offer. Either the best price or the possibility of immediate payment was decisive criterion for altogether 85% farmers. Debt or other obligations were rarely mentioned as the criteria to choose the buyer.

Less than half of farmers felt that they were well informed about the markets. Although majority of farm households (62% in northern Ghana, 72% in Uganda) owned a mobile phone, they were not widely used to obtain market information. Uninformeness about the prices, wide coverage of mobile phones and the importance of prices upon selling decisions suggest that mobile technologies in agricultural marketing has the potential to increase competition and thereby increase farm income in these countries.

Key words: Market access, farming, Africa, mobile phone use

## **Introduction**

The performance of local markets plays a decisive role in promoting economic growth and reducing poverty in Africa. Improvements in infrastructure and market performance are important when providing small-scale farm households with better opportunities to gain income. An important aspect related to the markets is farmers' fair access to markets, which includes the process of finding buyers to the products, finding price information and negotiating prices. Because market situation changes constantly, it is particularly important to have up-to-date information on the markets.

More efficient market information systems can reduce agricultural marketing margins and price volatility and increase prices that farmers are able to receive upon selling their products. New market information systems and services based on mobile communication technologies create opportunities to reduce the cost of linking buyers and sellers, thus developing opportunities to reduce poverty. Previous studies have shown that such mobile technologies have, at least in some markets, the potential to benefit farmers (Cole and Fernando 2012, Mittal and Mehar 2012).

The need for better information, the possibility to select among buyers, the importance of price as selection criteria, and widespread ownership of mobile phones can be considered as the prerequisites for the farmers to benefit from the use mobile communication technologies to improve market access. The goal of this study was to examine how small-scale farmers in Ghana and Uganda use marketing channels, what is the choice of buyers and how they use mobile phones to obtain market information.

## **Material and methods**

Two farm-household surveys were carried out separately, one in Ghana and another in Uganda. In Ghana the survey was carried out in October - December 2011. In Uganda the survey was carried out in September - December 2012. The surveys covered 1290 Ghanaian farm-households which were selected by stratified random sample of northern Ghana, and 1440 Ugandan farm-households which were selected by stratified random sample from 8 purposively selected districts.

In both countries, the baseline sample was selected using a two-stage stratified random sample. For example, in Ghana the survey covered all 43 districts in northern Ghana. In each district, three villages were randomly selected. In each selected village, 10 households were randomly selected to be included in the survey. In Uganda, 18 villages were randomly selected in each district, and 10 farm households were randomly selected from each of these villages. Sampling weights were calculated to assess how many households a household was representing in each area at the population level.

To collect the data, each household was visited and interviewed by an enumerator. For each household, they collected information on issues such as education and literacy, main and secondary activity, land use, crop mix, the use of inputs and the ownership of productive assets, yields of each crop and animal type, non-farm activities, access to credit, access to mobile phones, household decision-making, participation in community organizations, and allocation of time. The data were summarized and descriptive statistics were produced.

## **Results and discussion**

The survey results suggest that in the sample areas of both countries, the median farmer sells slightly more than one-third of their crop output. In both countries, about 90% of sales were to traders, with consumers accounting for most of the rest. Direct sales to processors, exporters or supermarkets were rare in both countries. Also cooperatives had a negligible role in crop marketing in both datasets: less than ten per cent of interviewed farmers had ever sold their crop through a cooperative or a farm organization. In Uganda, most (84%) sales took place at the farm, whereas in Ghana most sales (74%) involved the farmer bringing the product to market. These results may be due to the impact of smaller marketing revenues or lower population density in the northern Ghana than in Uganda.

Regarding the magnitude of crop sales, the data did not show clear distinction between "subsistence" and "commercial" households. The median share of crop production that is sold was 38% in Uganda and 34% in Ghana. In Uganda only 14% did not sell any crop products whereas the proportion was 28% in northern Ghana. A large majority of interviewed farmers were able to choose among multiple traders.

Regarding the main commercialized crop, 26% of Ugandan and 44% of Ghanaian households were able to choose among at least six buyers.

In both study areas, the majority of farms selected the buyer based on the best price offer. The second most common criterion for selecting the buyer was the possibility of immediate payment. These two criteria were primary criteria for altogether 85% farmers. Debt or other obligations were rarely mentioned as the criteria to choose the buyer (Figure 1).

A majority of farm households in both countries owned mobile phones (62% in Ghana and 72% in Uganda), but only about one-quarter of owners used it to gather market information. According to a probit model explaining the mobile phone ownership, households owning mobile phones tended to have more members, higher income, and more education than households not owning the phone. Sex of head of household was did not significantly determine the ownership after controlling for the effect of other factors. Less than half of farmers in both countries felt well-informed about agricultural prices, and this share was even smaller among small-scale farmers (Figure 2)

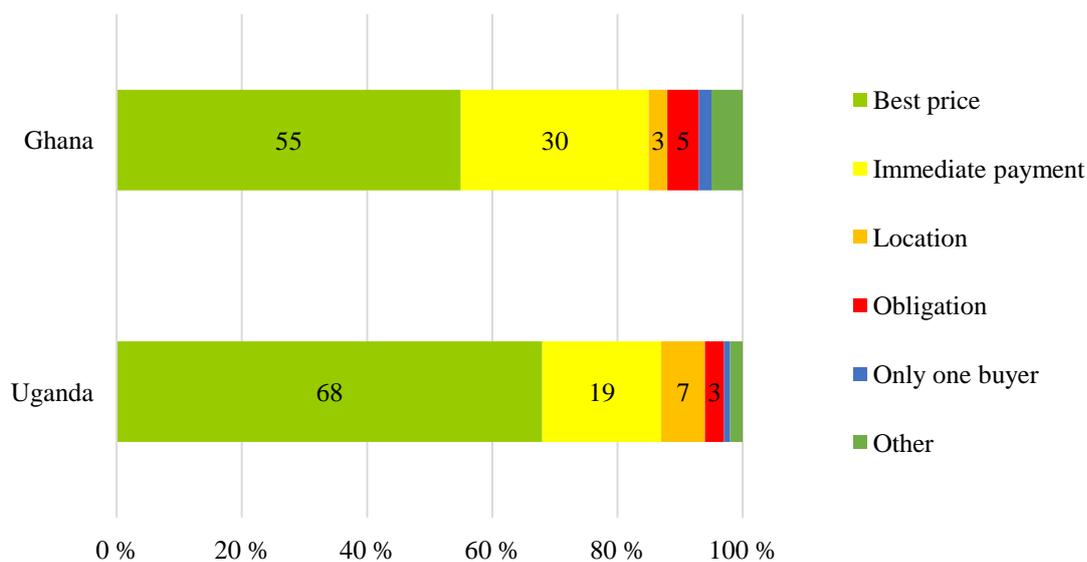


Figure 1. Share (%) of household by reason for selecting buyer when selling agricultural products

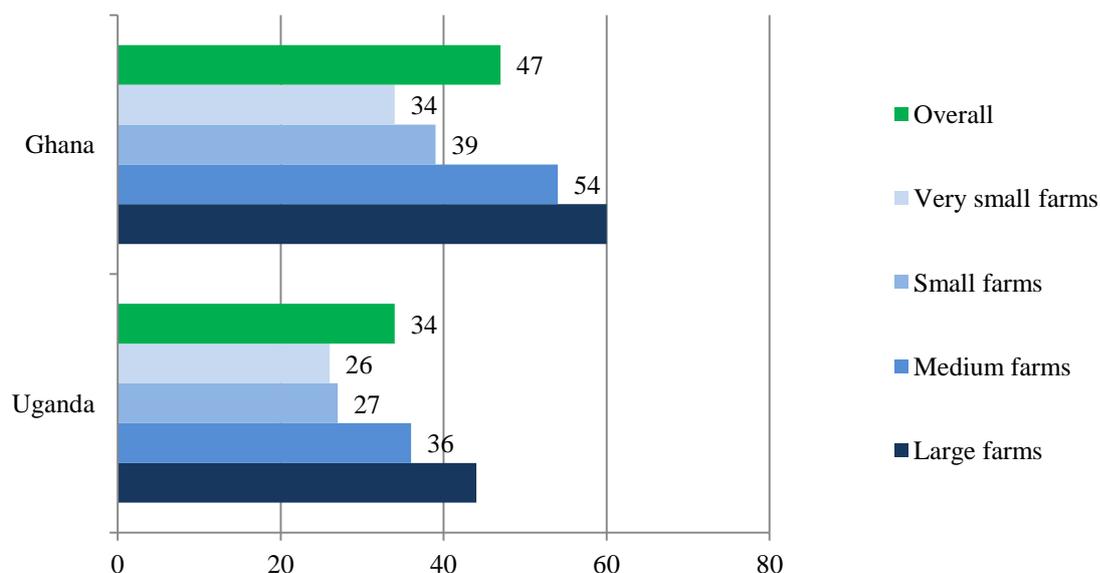


Figure 2. Perception of being well-informed about prices among all survey respondents in Ghana and Uganda, and by farm-size category (% of households belonging to respective category).

## Conclusions

The need for better information, possibility to choose among multiple buyers, importance of price as selection criteria, and widespread ownership of mobile phones can be considered as prerequisites for farmers to benefit from the use of mobile communication technologies to improve market access. The results suggest that surveyed farm-households in Ghana and Uganda were able to choose among multiple buyers for their agricultural products. The price of product and the payment conditions were key factors determining the buyer. Although majority of farm households owned a mobile phone, they were not widely used to obtain market information. Therefore, mobile technologies have the potential to increase competition and improve farm income in these countries.

## Acknowledgements

This article is based on research carried out under the FoodAfrica Programme, financed as a research collaboration between the Ministry for Foreign Affairs of Finland, Natural Resources Institute Finland (Luke), the International Food Policy Research Institute, the International Livestock Research Institute, the World Forestry Center, Bioversity International, University of Helsinki and HAMK University of Applied Sciences.

## References

- Cole, S.A. & Fernando, A.H.** 2012. The Value of Advice: Evidence from Mobile Phone-Based Agricultural Extension. Harvard Business School Finance Working Paper No. 13-047.
- Mittal, S. & Mehar, M.** 2012. How Mobile Phones Contribute to Growth of Small Farmers? Evidence from India. Quarterly Journal of International Agriculture 51, pp. 227-244.