

Potential of Mobile Communication for Agricultural Knowledge Sharing: Exploring the Case of Ginger Farmers in the Kurunegala District

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Abstract

Mobile phones can play an important role in advancing knowledge sharing, particularly in an agricultural context, mainly because it is seen as commonly available, easily assessable and reasonably affordable technology for farming communities. This paper presents the current status of use of mobile communication for information sharing by ginger farmers in the Kurunegala district in Sri Lanka. Data were collected through a face-to-face interview, which were supported by a pre-tested structured questionnaire prepared based on the 'LIRNEasia Teleuse at BOP4' instrument, from a sample of ginger farmers (n=42) during April–July, 2014 from four Grama Niladhari Divisions (Dambahera, Madahapoala, Omaragolla and Panliyaddha) in the Kurunegala district, those were registered farmers of the North Division of the Department of Export Agriculture (DOEA). The collected data were analyzed using Chi-square and Kruskal-Wallis tests. The outcome of analysis showed that more than 90 percent of ginger farmers in the Kurunegala district, in general, use mobile phone as a source of information sharing in their day-to-day life. It was observed that the level of income (i.e. ability to use) did not act as a barrier for this purpose however, effective information sharing was hindered by the level of education of farmers (i.e. capacity to use). This highlights that mobile phones can be promoted with appropriate training and on correct usage, to disseminate vital information on farming practices to the farmers on time. This highlights the importance of developing appropriate packages targeting farming community with right mix of market-based and regulatory incentives to facilitate information sharing and knowledge mobilization.

Keywords: Farmer Perception, Knowledge sharing, Mobile communication

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Introduction

The Information and Communication Technologies (ICTs) such as Mobile communication, Electronic mail, Internet and Radio etc. are extensively used for information sharing in agriculture in developed countries. Recently, mobile communication has experienced an exponential growth in all over the world, and according to the estimates from International Telecommunication Union, there are more than 7 billion mobile phone subscribers globally, and in Sri Lanka this number has reached about 22 million by the mid of year 2015. Mobile technology includes mobile phones, smart phones, tablets and the technologies that surround them. Among these, 'mobile phone' has been emerged as the popular technology amongst the farmers in many countries, mainly because it is seen as a low cost and widely available communication tool that can be used conveniently for knowledge sharing in the agriculture sector. In fact, it has become the first and the single most modern technology personally owned by the poor (Adamides and

Stylianou, 2013; Qiang *et al.*, 2011).

A number of previous studies concluded that mobile communication is capable of making a significant impact on agricultural development and knowledge sharing. Aker (2010), for example, shows that the use of mobile phones, together with allied services, can provide new opportunities for farmers to obtain access to agricultural information such as market prices, weather reports and agricultural techniques in various formats, i.e. voice, video and text. There is dearth of literature pertaining to the uses, level of adoption and implications of mobile communication in rural agricultural communities. Jayathilake *et al.* (2015), for example, found that, the interventions of low cost ICTs to the agricultural sector in Sri Lanka, has increased the level of information provided to its stakeholders to a greater extent that help to diminish the transaction costs associated with provision of information in the process of mobilization of knowledge. This study was aimed to examine the potential for using 'Short

Message Services' (SMS) to disseminate valid and reliable information to Ginger farming communities in the Kurunegala district in Sri Lanka.

Materials and Methods

The outcome of this analysis is based on the information gathered from one of the eight agricultural communities identified in an ongoing Canada-Sri Lanka Partnership Development Project (CSLPDP) funded by the Social Sciences and Humanities Research Council (SSHRC) of Canada with the view of assessing the use of low cost communication technologies for knowledge mobilization in agricultural communities in Sri Lanka and to recommend how ICT tools use in agricultural knowledge sharing in the rural farming communities. The data for this particular study was obtained from the agricultural community involved with "Ginger Farming" in the Kurunegala district under the guidance of the North Division of the Department of Export Agriculture (DOEA), which includes more than 200 registered ginger farmers from four Grama Niladhari Divisions (DNDs), i.e. Dambahera, Madahapoala, Omaragolla and Panliyaddha.

On the understanding that "Mobile Telephony" is in place as the most commonly available, easily accessible and reasonably affordable ICT for farming communities, a face-to-face interview, supported by a pre-tested structured questionnaire, was carried out with a purposively selected sample of ginger farmers (n=42) from these GNDs during April - July, 2014 to get an insight into "how", "when", and "why" mobile telephony was used in their day-to-day life. The 'LIRNEasia Teleuse@BOP4' instrument was adopted, in particular, for the purpose of designing the questionnaire in order to collect the specific data on frequency of using mobile telephony; mobile phone applications most frequently used by farmers to receive information; socio-economic and demographic characteristics and farmer behavior on agricultural information seeking.

Both descriptive and inferential statistical methods were used to analyze data using the 'Statistical Analysis System' (SAS) software. The scores provided by respondents to a set of statements included in the pre-tested structured questionnaire were used, after testing for their validity, to construct an index - referred to as "MINDEX", representing the level of use of 'Short Message Service' (SMS) in mobile communication (Fredrickson, 1984). The

Kruskal-Wallis tests were applied in particular to assess whether farmers' use of mobile phones is correlated with their level of education and household income.

Results and Discussions

The sample consists of 78 percent of Male farmers. The Mean age of respondents was 46 years. Nearly 87 percent of farmers were Sinhalese and almost of them were Buddhists. The rest was comprised of Tamil Hindus. It was found that more than 96 percent of farmers in the community used at least one of any modes of phone to take or receive a telephone call over in the recent past, and nearly 68 percent of farmers use their own mobile phone/s for this purpose, in particular. Of the mobile users, about 79 and 70 percent, respectively, own a 'single active SIM' and use at least a one "pre-paid connection". Not surprisingly, more than 90 percent of farmers use the mobile phone to take and/or receive phone calls regularly for various purposes. However, only about 18 percent of them were familiar with using SMS facility in the phone.

One of the key objectives of CSLPDP is to educate and train farmers to use SMS in their agricultural activities to get valid and reliable information on related farming practices. The relationship between the 'value of MINDEX' of, and the 'constraints' faced by, a farmer was assessed by Chi-square test where the following constraints were specified as explanatory variables, in particular: "Don't know what it is" [dntsms]; "using SMS is confusing to me" [consms]; "difficult to go through menu and open it" [difmnu]; "too difficult for me to type" [diftyp], "too expensive for me" [tooeexp], and "don't see any benefits of using it" [dntbef]. The outcome of analysis is summarized in Table 1.

The results highlight that the variables "dntsms", "consms" and "difmnu" as having the highest impact on the value of MINDEX. The three levels of education used in Chi-square analysis, i.e.: (1) Grade 0 to 4 (21%); (2) Grade 5 to 9 (47%), and (3) Grade 10 to 12 (32%), were statistically significant (chi-square=20.145, p=0.0051) implying that farmers level of education has a positive effect on information sharing. In the context of annual household income, the two distinct categories used in Chi-square analysis, i.e.: (1) < Rs. 180,000 per annum (56%), and (2) > Rs. 180,000 per annum (44%) were not statistically significant (chi-square=45.64, p=0.1321) suggesting that, irrespective of the level of income, farmers use mobile phones.

Table 1 :Parameter values in Chi-square for MINDEX

Constraint	Frequency	Percent	Cumulative Frequency	Cumulative Percent
consms	16	26.12	16	26.12
difmnu	14	23.25	30	49.37
difty	7	8.86	37	58.24
dntbef	4	6.78	41	65.02
dntsms	21	32.59	62	97.61
tooexp	2	2.39	64	100.00

Chi-Square 26.1356 Pr > ChiSq <.0001 Sample Size = 64

Conclusions

The results show that more than 90 percent of ginger farmers in the Kurunegala district, in general, use mobile phone as a source of information sharing in their day-to-day life. It was found that the level of income of a farmer, which for the most part determines a farmer's 'ability to purchase' a mobile phone, may be, with much advanced features, did not act as a significant barrier towards use of a mobile phone to share information in their day-to-day life. Nevertheless, this is reverse in the case of their level of education that enhances a farmers 'capacity to use' it effectively. The results show that less educated farmers were not in a position to use the mobile phone effectively. These imply that mobile phone, especially its SMS facility, can be promoted with appropriate training to disseminate vital information on farming practices to the farmers on time. The stakeholders work on these criteria, thus, may come up with appropriate user-friendly packages targeting different farming communities, which shall be regulated by relevant line Ministries to make sure that 'right information is shared' and facilitated with various market-based incentives to 'augment the level of usage'.

References

- Adamides G and Stylianou A 2013. ICT and Mobile Phone Use for Agricultural Knowledge Sharing by Cypriot Farmers. *Agris on-line Papers in Economics and Informatics*. 5 (2): 3-10.
- Aker J 2010. Information from Markets Near and Far: Mobile Phones and Agricultural Markets in Niger, *American Economic Journal. Applied Economics*. 2: 46-59.
- Fredrickson JW 1984. The Comprehensiveness of Strategic Decision Process: Extension, Observations, Future Directions. *Academy of Management Journal*. 27:445-466.
- Jayathilake HACK, Jayasinghe-Mudalige UK, Gow GA, Waidyanatha N and Perera LDRD 2015. Use of Low Cost Information Communication Technologies for Knowledge Mobilization in Agricultural Communities in Sri Lanka. 8th International Research Conference, General Sir John Kothalawala Defence University, Rathmalana, Sri Lanka.
- Qiang CZ, Kuek SC, Dymond A 2011. *Mobile Applications for Agriculture and Rural Development*. ICT Sector Unit, World Bank: Washington, DC.