

WHATSAPP FOR FARMERS: ENHANCING THE SCOPE AND COVERAGE OF TRADITIONAL AGRICULTURAL EXTENSION

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Abstract: Mobile internet in India has the strong potential to improve small farmer's access to agricultural knowledge and information. The internet and social media penetration are likely to increase substantially in near future. Here lies an opportunity to use social media for sharing agrarian information to rural mobile internet users. WhatsApp; one of the most popular social media tools offers many unique advantages, which makes it a potent agricultural extension tool. However, its use is accompanied by many challenges, which also need to be addressed, to use it effectively.

Keywords: Mobile internet, WhatsApp model, Advantages, Applications, Challenges.

INTRODUCTION

Smallholder farming systems in India are much less productive and profitable as they should be (GOI, 2015). Poor agricultural productivity has huge implications on employment, growth and poverty of sizeable population of India. As per census 2011, 54.3 percent of the population of India is engaged in agriculture (GOI, 2015). Knowledge and information gap seems to be one of the major factors for poor agricultural productivity (Singh, 2002). This gap seems to be the result of inadequacies of the current agricultural information delivery system. Yield increases of 50 percent or more often occur; when improved inputs are used, and better knowledge applied. Limited coverage, insufficient focus and attention to extension, shortage of manpower, budgetary constraints, infrequent interaction and absence of regular feedback have affected the quality of agricultural advisory services (Birner and Anderson, 2007; Cole and Fernando, 2012; Kaka et al. 2014; Glendenning et al. 2010). On the other hand, farmers are in dire need of these information services at different stages of crop and livestock production cycle. In crop production, it is related to introducing a particular crop, production techniques, agricultural inputs, market information, weather forecast, availability of credit, and expert advice about maintaining crops in a healthy state (Milovanovic, 2014).

In livestock production, information may be needed for feeding, breeding management,

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prevention from diseases occurring at different stages of the life of an animal. Such type of timely information requirements cannot be met through traditional face to face extension methods due to their geographical and time constraints.

Low-cost information and communication technology (ICT) tools promise the ability to deliver timely, relevant, and actionable information to farmers throughout the world, at dramatically lower costs than traditional extension services (Aker, 2010; Cole and Fernando, 2012, World Bank, 2016). Among these tools, the mobile internet offers a futuristic scope for access to varied forms of dynamic information needed in agricultural production. The use of smart phones to provide localized agricultural information can help to reduce crop losses, improve yields as well as has a much more powerful equalizing effect on the incomes of small farmers, including rural women (Shoham, 2015). Smart phone users spend considerably more time on social media platforms such as WhatsApp. Thus, there exists an ample opportunity to utilize WhatsApp for agricultural extension activities.

Currently, most of the mobile agricultural information services being delivered in Asia are voiced and SMS based services. This is obvious given the fact that a large number of mobile phone users have featured instead of smart phones. The ratio of featured phone users to the smart phone users in developing countries is nearly four to one (FAO, 2012). However, this situation is probable to change soon, with declining handset prices and increasing smart phone penetration. The number of internet users in India are likely to be over 500 million by 2020 (Morgan Stanley, 2015). In rural India, mobiles have become major ways to access the internet. Rural mobile internet use has grown from less than a million in 2010 to 25 million people in 2014. This rapid spread of mobile technology in rural areas of India offers a fresh channel for delivering agricultural services and an opportunity to engage countrified communities in new ways (Vodafone Foundation, 2015). The SMS-based mobile agricultural information services can be regarded as a first-generation approach that works on push approach in which farmers receive a set number of SMS texts per week (Vodafone, 2016). SMS based services are primarily one to one services (Andres and Woodard, 2013). This seems to be a generalized approach of mobile agricultural information services. This approach can be questionable in terms of need and interest of the farmers who may view more of it's a spam. Instead, a two-way interactivity through ICT platforms builds trust among farmers (Bell, 2015). Voice based, and SMS enabled mobile agro-advisory services can be improved through the provision of locally relevant, storable and referenceable

information. This can also be improved through the availability of experts, and video enabled information delivery (Kokate and Singh, 2013).

Although, at present farmers have the opportunity to avail a more customised advice seeking approach in which farmers resort to a helpline which may be government funded or provided by the private service provider such as IKSL and RML (Vodafone, 2016). Even then such services have been reported to be of lesser practical nature (Fernandes, 2015). The IVR or the call centre based mobile agricultural information services offer little scope for detailed analysis, as the only way of measuring the efficiency of these services is by monitoring the frequency and count of calls being maintained (Siraj, 2012).

WhatsApp offers several advantages over these mobile agricultural information services. It is a form of a social media tool that enables one to many and many to many types of conversation and sharing information and facilitating discussion (Andres and Woodard, 2013). It has become the most preferred mode of communication among the smart phone using farmers. One can share information in multiple forms ranging from text-based messages to audios, visuals; audiovisual and even web links making it an information-enriched platform. Additionally, information sharing is possible at any place and at any time without worrying about background disturbances. This tool is simpler and easy to use, has low internet data requirements, and is increasingly popular in rural India. Thus, it has a strong potential to be a viable agricultural extension tool for extension based organisations in general and extension educators, in particular, to reach out to the WhatsApp using farming clientele. The applications of WhatsApp in agriculture are manifold. However, efficient use of WhatsApp goes beyond mere by information dissemination to exchange and user engagement. Certain guidelines need to be kept in mind to make its use more impressive and sustainable. All these points have been discussed in the article.

Advantages of using WhatsApp

1. It increases the scope and coverage of agricultural extension.

The latest situation assessment survey of agricultural households in India (NSSO, 2014) points out to the fact that only 11 percent of such type households received advisory services from physical government machinery- extension agents, KVKs and agricultural universities. This presents a grim picture. Mass Media is one of the most popular medium of deriving information as almost 20 percent agricultural households get information from them (NSSO, 2014). However, their role in information adoption remains paltry as opportunities of further feedback and clarification is generally very low. Moreover, the much talked about

ICT based platforms such as a AQUA suffer from very limited coverage. This hugely referred internet based discussion portal, initiated by IIT, Mumbai had a small user base of 14,230 between 2003 and 2010 (Brugger, 2011).

WhatsApp as an extension tool does not have such limitations. It has already a huge user base globally as well as in developing countries. Within few seconds, one can disseminate information to a large number of intended and unintended recipients beyond limitations of time and geographical boundaries. Opportunities for further feedback and clarifications are high through this tool. Thus, WhatsApp has the potential to enhance the coverage and scope of extension.

2. It is an easy and convenient way of communicating with the farmers.

The current forms of extension education methods (face to face, mass media, etc.) require a substantial amount of time and complexity of efforts to communicate with the farmers. Mass media methods demand high infrastructure requirements, content preparation, refinement and delivery to produce the desired effect. Similarly, modern ICT based advisory services require greater infrastructural availability on the part of provider and user. On the other hand, WhatsApp seems to be a relatively easier and simpler ICT tool for farmers. This does not require much of ICT skills. It can be easily operated through mobile internet compared to other web-based portals, which are primarily computer based. This is important given the fact that farming requires long hours of diligence and work. Similarly, office hours of work are limited to extension educators. WhatsApp offers a communication approach that can be quite flexible, as at any time and any place, interaction is possible. Beyond normal discussions, sufficient snippets of information dissemination can also be delivered through WhatsApp. This is possible through WhatsApp web version in which one can use desktop/laptop keyboard to type faster and with greater ease. Further, it's now quite easy to send a message through WhatsApp in most of the Indian and foreign languages. Google transliteration tool available through the internet on desktop/laptop can be used for this purpose.

3. It usually requires lesser internet data demands

It is less internet data demanding application when compared to other applications. For farmers, this can be hugely beneficial, as they may have limited Internet data availability. Further, in the case of limited internet connectivity such as operating in 2G internet network, it can still function well. WhatsApp usage has reduced transaction costs as well as made interaction with farmers more frequent. In the Indian State of Karnataka, the Department of

Agriculture has made it mandatory for its development officials to have a smartphone so that they could share information, messages, and circulars through WhatsApp (Chander, 2016).

4. It is information enriched medium of information delivery.

In other methods of information delivery such as verbal methods, including IVR based mobile call centre services; chances of loss of vital information are high. Information may be incompletely understood, retained, forgotten during face to face and mass media (Television, Radio) extension methods. In WhatsApp, the information storage, archival and transfer to hard data-storage devices such as a computer is also possible. Further, information can be delivered in multiple ways such as audios, texts, visuals, and audio-visuals. The understanding of the message would, therefore, would be relatively high, through this medium.

5 It is more participative and demand driven extension tool.

Current extension education activities are largely one way of information delivery. Training lectures, mobile based agro advisory services offer fewer opportunities to farmers to respond and ask queries. The farmers may remain hesitant to clarify his doubts, and many of his queries may remain unanswered. WhatsApp has the potential to reduce these limitations. Even hesitant and shy farmers can participate through encouragement and support. User feedback is easier to receive, and it is prompt. One can communicate instantaneously through multiple ways in one to one, one to many and many to many ways.

6. It encourages peer learning.

Learning is amplified, and knowledge becomes more widely available as the network of people, tools and connections strengthen. WhatsApp groups fulfill requirements of this kind of learning as it can promote farmer networking and interaction. It is easier for farmers to communicate with peers, extension professionals and experts in real time. Many times, fellow farmers answer the queries of other farmers. This has the potential to build networking and trust among each other.

7. WhatsApp is more advantageous than Kisan Call Centers.

The government of India uses mKisan portal in which farmer queries are addressed through the inflow of calls in Kisan Call centres. These centres along with SMS based services offer a good piece of information to the farmers. However, there are certain limitations of this mechanism. The resource persons rely only on the voice mode of query sought by the farmer. Many times he has little time to reflect or refer to locale-specific aspects of information sought by the farmer. As a result, many of the farmers report that the information offered

through these centres is sometimes very general in nature. After the query has been once replied, there remains no direct mechanism to ascertain the extent of utilization and adoption of information by the farmer. These limitations can be overcome through the use of WhatsApp. The queries can be posted in type of pictures and audio-visual format. This arrangement can improve diagnosis and advice to the farmers (Mittal et al. 2010). Further, farmers can post a query at any time and at any place irrespective of background ambient noises and other disturbances. The resource person has ample time to think and refers to the query in detail. The assessment of farmer's query is better through this platform. Thus, the possibility of relevant and accurate information delivery remains much higher through this platform. Furthermore, there are greater chances of peer discussions and learning, which are impossible through mobile advisory services. Furthermore, important answered queries and discussions can be archived for future reference.

Applications of WhatsApp in agriculture extension

1. Plant-based diagnostic support

Information on how to diagnose and treat plant disease is important for farmers. Plant disease that could wipe out the entire crop is one of the biggest risks that farmers face (Mittal et al. 2010). Lack of awareness, distant locations and long hours of diligence and work makes farmer's reluctant to visit plant clinics to seek timely plant diagnostic support. Even with the toll-free calls due to longer call waiting for services, noise disturbances, poor voice quality due to network problems, use of more technical language, lack of audio-visual backup may affect the quality of information delivered. WhatsApp has certain unique advantages in this regard. First is that it does not suffer from geographical and time limitations. At an instant, farmers can post his/her query without visiting the agriculture centre. This can save a considerable amount of time, money as well as the worry of the farmers. They can post pictures of different parts (leaves, stem, fruits, and roots) of infected crops. This can be supplemented through text or even a short-duration video. WhatsApp provides a good medium in which farmers can receive crop diagnostic support services. Besides, the resource person has greater freedom to think and even discuss the plant health problem and is more able to diagnose the problem due to a visual examination which is impossible in case of many existing mobile-based agricultural information services. Furthermore, during answering a query the other farmers facing a similar type of problem are as well likely to find answers to their problems.

Thus, WhatsApp offers a better alternative than toll-free Kisan Call centre which farmers have reported to be more general in nature.

2. Livestock based diagnostic support.

Quite often, the occurrence of new diseases poses as an unforeseen problem to farmer leaving him clueless and in a confused state. This along with another labour demanding routine agricultural chores delay timely intervention needed to the ailing animal. As a result, due to negligence the owner faces several animal production losses. WhatsApp can provide timely information and advice and can significantly reduce major complications likely to emerge in case the animal remains unattended by the basic veterinary aids. Basic first aid support for a number of animal health problems such as seasonal diarrhea, heat stress, worm load, mineral deficiency diseases, minor digestive disorders, wounds, reduced feed intake and decreased milk production can be offered through this platform.

Furthermore, receiving feedback about/on recovered animal is easier through this platform. This can definitely improve the quality of disease diagnosis and timely veterinary aid.

3. Information sharing about different agricultural actives

The ambit of information delivery through WhatsApp can be quite broad and information about varied aspects of agriculture can be offered. Some of the examples of information being shared among popular WhatsApp group have been shared below in Table 1:

Table 1: Examples of popular whatsapp group of farmer members in India

Name of the group	Information about members	Administrator of group	Type of Content Shared
1. Krishi Jagran Group	Farmers of states of Rajasthan, Uttar Pradesh, Madhya Pradesh, Maharashtra	Farmer Entrepreneur	Information about crop varieties, soil management, irrigation practices, agricultural machinery, input companies ,marketing prices of various commodities
2. Pashu Palan group	Farmers of states of Rajasthan, Maharashtra, Madhya Pradesh, Rajasthan Uttar Pradesh Haryana and Gujarat	Veterinarian	Information about livestock breeds, feeding and health management.
3. Baliraja	Farmers of states of Maharashtra	Farmer Entrepreneur	1.Pictures of agricultural Produce 2. General information on agriculture problems.
4. Young Progressive Farmers group	Farmers of state of Punjab,	Agricultural officer, Punjab	1.Information about seed treatment of wheat and paddy, 2.Information about soil testing-based application of phosphate

			fertilizers in the cultivation of paddy 3. Awareness regarding management of yellow rust disease in addition to information about training camps to be organized.
5.Goat Owners group	Farmers of Pune and Mumbai	Managed by Farmer Entrepreneur	1.Photos of Live animals 2.Negotiations of selling and buying

(Kamal, 2016; Vora, 2015)

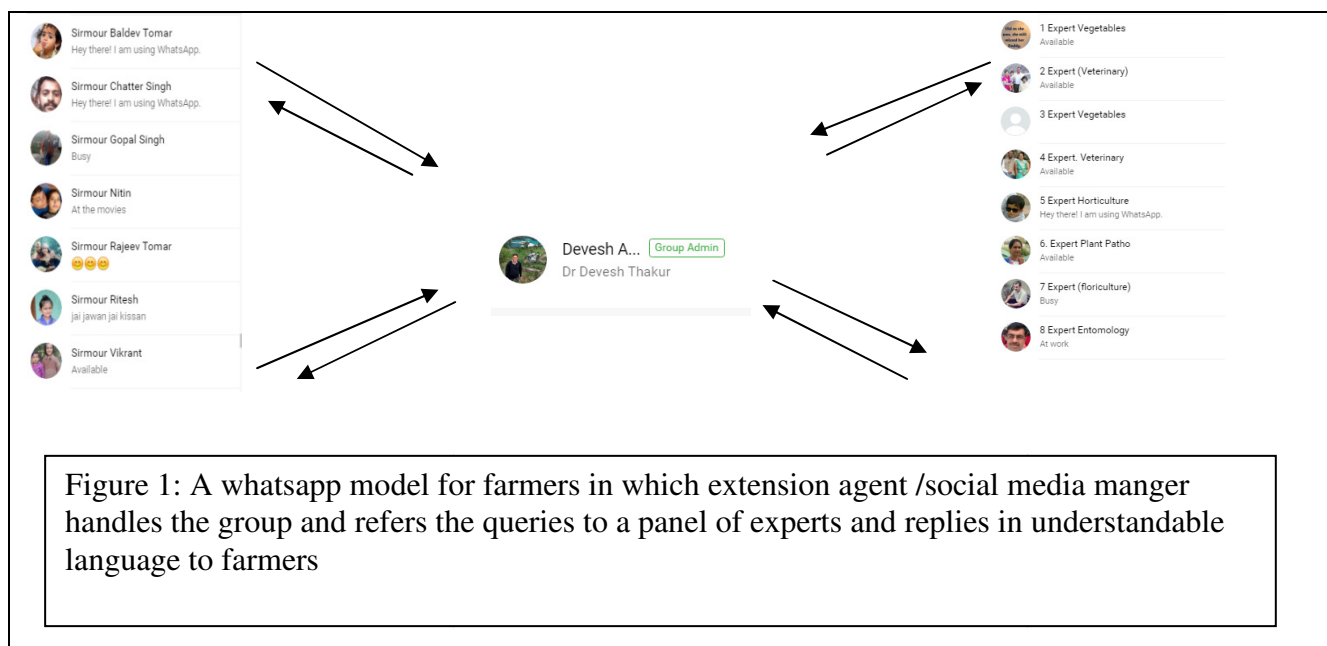
4. WhatsApp can promote learning during and after farmer training programme

The opportunities of clarification and removal of post training doubts among farmer participants remain little .As a result, a sizeable proportion of knowledge and information gained by participants may be lost. The use of whatsApp for continued interaction after training program can offer blended and peer learning among farmers. This can also offer an opportunity for farmers to ask for support during implementation of knowledge and skills learnt during the training.

5. Use of different WhatsApp models in agriculture

Most of ICT-based websites and portals are built on a single commodity or enterprise. Most of this delivered information that is too generic may have little value in terms of action by the farmers. Farmers require access to more varied, multisource, context-specific information to different enterprises (crop, livestock, horticulture, etc.)

WhatsApp can be used to offer context-specific information by linking farmers on one side and resource persons of different disciplines on the other interlinked through a common mediator. The role of the mediator would be to receive the queries from the farmers on one side and sending them individually to different experts. After receiving the queries from different experts, the mediator can share the pooled advice in an easily understandable form to the farmer clientele (Thakur, 2016).



Limitations and challenges of using WhatsApp in agriculture

1. Whatsapp usage in agricultural extension requires committed time and efforts on the part of administrators and to a certain extent, from the members as well. One has to keep on posting something new, which must be pertinent to the farmers. Many of the ICT projects in India have suffered as relevant and localized content remains unavailable and unaffordable (Yadav et al. 2015). Similarly, information received through mobile phones have also been criticised by farmers as generic, old and of routine nature (Mittal et al. 2010). This is not surprising as locally contextual content has higher adoption and can lead to increased farm productivity (Mittal, 2015). Content curation, as well as content management, can, therefore, be the biggest challenge of using WhatsApp for the farmers.
2. Goal or objective clarity in terms of utilization of WhatsApp is important. The initial enthusiasm of WhatsApp group may be very soon lost if the administrator and members are unclear about the purpose of the group.
3. Often farmers in developing countries have limited internet data pack availability. So care should be taken about posting excessive updates, which may create unnecessary information overload as well lost of internet data to them. Instead, periodic short snippets of information can be offered.
4. Use of social media requires regular and frequent attention. Sometimes members may post impertinent contents in form of promotional messages, jokes, etc. Hence; the members may be reminded not to post such type of irrelevant messages in the group. Repeated offenders

may be removed from the group. Furthermore, the quality of images received through farmer participants of the group may sometimes be poor in offering diagnostic information and advice to them.

5. For most of the social media users, the primary motive remains socialising, fun and entertainment. Therefore the relevance of using social media as an information source for professional application may be overlooked (Cook, 2013 and Saravanan and Bhattacharjee, 2014). Further, lack of privacy remains an obstacle for extension educators to communicate with target clientele. Consequently, the readiness of extension professionals to accept and use social media to communicate with the clienteles can be an issue (Sarvanan et al., 2017).

6. Social media platforms are continuously evolving. Online communities tend to be more fickle and fragile as visual cues and body languages are generally lacking (Andres and Woodard, 2013). This can also be a challenge while using social media platforms to communicate with farmer clientele.

7. This is a technology that depends on upon the human interface. Unless the users are enthusiastic about its use, this platform would not succeed.

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