

## Challenges of meeting information needs of rural farmers through internet-based services: experiences from developing countries in Africa

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### Abstract:

*The purpose of this paper was to identify the various challenges associated with meeting information needs of rural farmers through internet-based services with references to experiences in developing countries. The study used literature review to collect relevant data. Deductions were drawn from content analysis of literature reviewed. The findings indicates that challenges to meeting information needs of rural farmers through internet-based services include lack of ICT infrastructures through which internet-based services can be provided and accessed, low level interest in utilizing agricultural information among rural farmers, inadequate knowledge among rural farmers, inadequate knowledge of rural farmers agricultural information needs, level of ICT literacy, non-existence of information providing agency in rural areas. The findings also revealed that creating of online farmers discussion forum, organizing ICT and agricultural information literacy, carrying out research to ascertain rural farmers agricultural information needs, repackaging of information using social media platform were recommended as solutions to the identified problems.*

**Keywords:** Africa, Developing countries, Internet-based services, Rural farmers

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## 1.0 Introduction

Agriculture is the leading sector of the economy in most developing countries, and thus it is essential for socio-economic growth because most of the rural poor depend on agriculture for their livelihoods. Agriculture occupies a central place in the overall development of most developed and undeveloped countries. Agriculture plays an important role in economic growth, enhancing food security, poverty, reduction and rural development. Agriculture is an important sector with the majority of the rural population in developing countries depending on it (Lwoga, 2010; Mwangi & Kariuki, 2015; Stienen, Bruinsma & Neuman, 2017). Agriculture has been a part of human life since the beginning of the human race and the need for agricultural information is probably almost as old as agriculture itself (Malhan & Rav, 2007). Agriculture remains an important source of livelihood for the majority of Africans but the sector is still very unproductive, resulting in food insecurity and large imports of staple foods (Verdier-Chouhare & Karaguezian, 2016). Agriculture remains a limestone for many rural communities and their local economy (Jeffcoat, Devis & Hu, 2012).

Information is regarded as a crucial resource and an important commodity for development, is a basic necessity and brings success in everyday life including farming activities (Odini, 2014). Information is a powerful tool for empowerment, it takes away ignorance and enables an individual to be enlightened and bold (Nicholas-Era, 2017). Information is the driving force of a modern society. Over the last few decades, the increased emphasis on information in every sphere of life has resulted in the increased use of information in every sector (Islam & Hoq, 2010). The role of information in any society, community, or organization cannot be over-emphasized. Information is very important in all phases of life (Idiegbeyan–Ose & Akpoghome, 2009).

The emergence of the Internet, and more specifically the web, in the last few years has brought along positive possibilities in terms of combining these two methods of communication (Letshela, 1999). As the world advances towards a global knowledge economy access to modern information and communication technology (ICTs) and its effective utilization to improve and sustain agricultural production though the world has become critical (Chisita, 2012). The development of ICTs has facilitated the dissemination of knowledge and information and its revolutionizing the use of technology in agricultural production and provision of market information to maximize the returns of agriculture (Asenso-Okyere & Mekonnen, 2012). Haruna and Baba (2017) citing Okunola posits that in the 21<sup>st</sup> century, information dissemination and retrieval depend largely on the ability of one to access and utilize the internet effectively through the use of various technological means. The internet has increasingly become more important to individuals and industries as a means to facilitate transactions and disseminate information (Jeffcoat, Davis & Hu, 2012). Internet is a tool that has great potential to encourage and facilitate information sharing among farmers. The introduction of the internet and online services has introduced new methods of carrying out many activities which can be described as “e-computing” (Adeyemo, 2013). The emergence of the Internet, and especially the web, is regarded as an important development with regard to using computer networks (Letshela, 1999). The incorporation of information technology into farming, involves the integration of diverse technologies with each capable of positively impacting the efficiency of farming activities (Adeyemo, 2017).

Farmers as noted by Milovanovic (2014) should be aware of benefits from internet and the other information and communication technologies (ICT) giving information services

that are significant for management of agricultural population. The internet, e-mail, web sites and web-based application are becoming increasingly important in sharing and in disseminating agricultural information and there are many on-going web-based application initiatives in Africa (Mumyua, Adera & Jensen, 2018). The role of ICTs as an instrument for program and development has been widely acknowledged in this “Global Information age,” and it has been observed that people from all walks of life are being impacted by the IT sector directly or indirectly (Syiem & Raji, 2015). Briggerman and Whitacre (2010:571) noted that:

The farming industry, in particular, has realized several potential benefits of the internet. For example, the internet provides access to timely information (such as weather forecasts or market prices). Farms can also reduce costs by buying in bulk inputs online or purchasing inputs that are not available locally. New markets are made available to farmers through individual farm websites. And, some farmers are selling their products.

Information is becoming a major input in agriculture, whilst, knowledge and information plays a central role for farmers to respond to opportunities that could improve their agricultural productivity (Nzongo & Mogambi, 2016). Essentially, agricultural information is a key component in improving small-scale agricultural production and linking increased production to remunerative markets, thus leading to improved rural livelihoods, food security and national economics (Masuki *et al*, 2010). Information-based, decision-making agricultural system (Precision Agriculture) is designed to maximize agricultural production and is often described as the next great evolution in agriculture (Mittal & Tripathi 2009).

Rural farmers refers to farmer living in the rural areas, most of them have low level of education, their major occupation is subsistence farming and they are generally characterized by poverty, poor health condition and ignorance (Nicholas-Ere, 2017). Rural farmers in developing countries need access to information, especially in this digital age. The purpose of this paper therefore, is to examine the challenges of meeting information needs of rural farmers through internet-based services.

## **2.0 Justification for Internet-Based Information Services to Rural Farmers**

Internet-based information is an effective information service mode that should be harnessed by rural farmers in order to improve in their agricultural productivity. Timely and relevant information is a necessity in re-engineering agricultural development at any level. Farmers in both urban and rural areas have felt need for information and the provision of this information is necessary for them to meet their information needs. Internet remains one the most powerful tool in the global that is being presently maximized by stakeholders in various fields of life make life meaningful and easy.

As noted by Naruka *et al* (2017), timeliness of agricultural information very crucial to farmers’ success. Farmers need to be provided with the information at the right time so as to apply that information in their farming activities for better farm productivity. Access to reliable, timely, and relevant information can help significantly and in many ways to reduce farmer’s risks and uncertainty, empowering than to make good decisions (Mittal and Mehar, 2013). According to Sani, Boadi, Oladokun and Kalusopa (2014), people can only use the available information at their disposal which is dependent on provision and access.

As rightly expressed by Magesa, Michael and Ko (2014), information enables small holder farmers to decide what to plant, when and where sale, and to negotiate better for the prices of their agricultural produces (p.44). Soyaim and Haliso (2015) affirmed that in agriculture, information is key in determining extent of productivity as farmers' need to upgrade to current practices for higher yield and income

The agricultural sector as noted by Stienen, Bruinsma and Newman (2017) is confronted with the major challenge of increasing production to feed a growing and increasingly prosperous population in a situation of decreasing availability of natural resources. According to FAO (2017), world population is expected to surpass the 9 billion Mark by 2050, and agricultural production will need to increase by 60 percent from its 2005/2007 levels to meet this additional food demand. ICT applications can make a significant contribution to meet this future global food needs (p.27).

According to FAO (2007:3), across the developing world rural communities are at a fundamental disadvantage to access knowledge. According to Nicholas-Ere (2017), when rural famers lack access to knowledge and information necessary to help them achieve maximum agricultural yield they are not only left in the dark but are left with no choice than to move to urban centers in search of farmer employment. Mcnamara *et al* (2011), posit that public and private sector actors have long been on the search for effective solutions to address both the long and short term challenges in agriculture, including how to answer the abundant information needs of farmers and ICT is seen as one of these solutions, and has unleashed incredible potentials to improve agriculture developing countries specifically. There is no doubt that the Internet and other networks have the capacity of providing rural farmers with timely, relevant, affordable and up to date information in connection with their agricultural practice etc.

### **3.0 Types of Information that can be provided to Rural Farmers through Internet-Based Information Service**

According to Milovanovic (2014), in order to improve agricultural production, farmers should have the following information: information on crops, information on production techniques, information on production equipment and agricultural input, market information. Other information of interest for farmers includes weather forecast, availability of credit, and expert advice about maintaining crops in healthy state. However, the type of information that can be provided to meet information needs of rural farmers include but not limited to the following:

a. **Market information:** Rural farmer need information on markets and their locations. Through access to market information, rural farmers could be able to know where to get farm machineries and where to sell agricultural products. Farmer if provided with market information will take the right decisions thereby contributing to agricultural development. .As rightly noted by Magesa, Michael & Ko (2014), due to lack of market information, farmers are failing to negotiate better on the prices of their produces and thus are paid a little. Use of accurate and timely agricultural market information enhances market performance by improving the knowledge of market actors.

b. **Price information:** As noted by Mittal and Mehar (2012), price information has an impact by improving the bargaining capability of farmers with traders, better price realization and reduction in arbitrage, wastage or spoilage.

c. **Information on credit facilities:** rural farmers need information on how to access credits facilities from financial institution in order to improve and enhance agricultural productivity.

d. **Pest control information:** Farmers in the rural areas need information on pest control methods. Access to timely and relevant information in pest control will contribute significantly to agricultural developments in developing countries

e. **Fertilizer sale points:** In as much as fertilizer is required by farmers in rural areas in order to improve agricultural productivity, it is imperative that farmers should be provided with information relating to fertilizer sale point.

#### **4.0 Challenges to Meeting Information Needs of Rural Farmers through Internet-Based Services**

i. **Lack of ICT infrastructures through which internet-based service can be provided and accessed:** Meeting information needs rural farmers in developing countries through internet-based information system is mostly hampered by lack of ICT infrastructures. Without ICT infrastructures like strong internet connectivity, internet service providers etc, it is difficult to connect the rural farmers and provide them with internet-based information services. Information service that could have been provided through websites, online forums, social media would hardly be provided when the infrastructures are not in place.

ii. **Low level of interest in utilizing agricultural information among rural farmers:** It has been acknowledge over time, that there is a connection between the level of interest in anything and extent of use same thing. Most rural farmers assumed that they have no need for information and prefer to continue their agricultural practices in their conventional mode. This visible low level of interest in utilizing agricultural information affect the extent to which rural information needs can be satisfied through internet-based services.

iii. **Inadequate knowledge of rural farmers agricultural information needs:** This is one of the major factor that affects the provision of internet-based services to rural farmers. Even when there are structures and facilities in place, it is pertinent that the information needs of rural famers are understood properly. Adequate understanding of rural famers information need is essential in providing internet-based information service, because it helps in determining the best approach and form of internet information system to adopt and use, this is because, while some information needs are personalized others may be generic. One approach may be not suitable for both.

iv. **Level of ICT literacy:** it has been established in literatures that the level of ICT literacy among rural farmers, especially in developing countries is abysmally low. This is a major limitation as far as meeting the information needs of rural farmers is concerned. Lamptey, Sambo and Hassan (2016) revealed that lack of technological expertise is one of the major challenges of dissemination of information. As noted by Letshela (1999), rural farmers in most instances are faced with the same challenges that confront the local population. Most rural farmers especially in Africa are illiterate and lack the skills to operate computers.

v. ***Non-existence of information providing agency in rural areas:*** lack of information providing agencies in rural areas affects the provision of internet-based service to rural farmers. Having information agency in rural areas would make it easier for stakeholder in agriculture to partner and ensure that such agencies are utilized as platforms to reach out and meet the agricultural information needs of rural farmers.

vi. ***Non-existence of agricultural advisory services in libraries:*** Libraries in most developing countries do not provide agricultural advisory services to rural farmers. This ordinarily would have been a good platform for reaching out to rural farmers.

## 5.0 Recommendation

Despite the numerous challenges associates with meeting the information needs of rural farmers through internet-based services, there are still solutions. The solutions to the identified challenges include:

1. ***Improving on the strength of internet connectivity:*** in other to meet the information needs or rural farmers through internet-based information services, it is imperative that internet connectivity is improved. As suggested by Haruna & Baba (2017), the Nigerian government should address the problem of using internet in agricultural and rural development via focusing on providing broadband connectivity and a content centric development approach particularly in the rural areas.
2. ***Creating of online farmers' discussion forum:*** Social media platform like Whatsapp and Facebook can be used to create Online Discussion Forums (ODF) for rural farmers through which their information needs can be satisfied at a minimal costs. If rural farmers have access to mobile phones, then there is a great potential for online forums. Creating of online farmers discussion forums would help rural farmers to access information that will help them to know various agricultural innovation that are relevant to them.
3. ***Organizing of ICT and agricultural information literacy for rural farmers:*** If preparation fails to precede opportunity, then challenge becomes inevitable. It is pertinent to organize ICT literacy classes for rural farmers; this would help them to be fully equipped to harness the potentials of internet-based information services.
4. ***Carrying out research to ascertain rural farmers' agricultural information needs:*** It is important that research should be carried out by stakeholders in agriculture in order to ascertain agricultural information needs of rural farmers. When this is done, it would equipped stakeholders with timely information on the best internet tools to adopt and use in agricultural information delivery.
5. ***Repackaging of information using social media platform:*** There is need to repackage agricultural information to meet the information needs of rural farmers. Social media platform can be maximized in repackaging of agricultural information.
6. ***Provision of online agricultural advisory and consultancy services:*** Library and information science practitioners should provide online agricultural advisory and consultancy services to rural farmers in developing countries.

## Conclusion

Internet has provided farmers generally with great potentials to maximize in order to improve in agricultural productivity thereby contributing to development. In this present dispensation, it is imperative that internet-based information service should be extended to the rural farmers as this will help in contributing significantly to agricultural development at the rural level. Information is a key factor in driving agricultural development at any level in the world. It is important that internet-based tools should be utilized by various stakeholders in agriculture to ensure that information needs of rural farmers are satisfied optimally.

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