Enhancing the role of rural agricultural extension programs in poverty alleviation: A review

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Abstract: Extension programs in rural communities play a critical role in linking farmers and other actors in rural developmental agenda. The relevance of these programs in agriculture is largely dependent on their ability to meet farmers’ needs since they are the stakeholders at the grassroots. This paper aimed to review studies on enhancing the role of rural agricultural extension programs in poverty alleviation. Various approaches and tools used in rural extension program delivery have been discussed, and ways in which their contribution to poverty alleviation can be enhanced have been highlighted. Extension programs have undergone many changes throughout the years in response to farmers’ changing needs as well as the market they operate in. Therefore, there is no “one-size-fits-all” approach recommended for effective service delivery and outcome due to different farmer needs that are affected by their geographical location, social and economic structures. We conclude that rural extension programs can provide a sustainable solution to

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PUBLIC INTEREST STATEMENT

Agriculture is an important sector that supports human life through the provision of food and incomes required for survival. It is now generally accepted that agriculture is one of the most powerful weapons in the fight against poverty. In developing countries and particularly in rural areas, the largest proportion of the human population could be considered extremely poor. However, agriculture is often the major source of livelihood and its contribution towards alleviating poverty levels largely depends on the effectiveness of extension programs. This paper reviewed numerous studies that have been conducted to understand the role of rural extension programs in poverty alleviation and suggest ways in which the role of these programs can be enhanced. This information is very useful in the programs that seek to make the fight against poverty through agriculture a reality.
poverty, however, the appropriate approaches should be chosen taking into account the needs of the farmers and market dynamics of a particular area.

**Subjects:** Agriculture & Environmental Sciences; Agriculture and Food; Agriculture

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1. Introduction

According to the World Bank (2017), approximately 80% of the poverty-stricken population in the world are rural dwellers who largely hinge their livelihood on agriculture or related activities for a living. Boosting agricultural production, therefore, is seen as one of the most powerful tools against poverty (Sahu & Das, 2015). Several studies clearly indicate that the agriculture sector is a key driver in poverty mitigation and the eventual attainment of economic development of many countries (Abdu-Raheem & Worth, 2016; Nnadi et al., 2013; Todaro & Smith, 2015). It is estimated that 50–80% of the staple foods eaten in third world countries are produced by peasants, fisherfolks, and livestock keepers, many of which are inadequately served by research, extension, and advisory services (Pye-Smith et al., 2012). Agriculturalists and other players in rural development need better access to technical information, knowledge, and advice, and must link with other actors in agri-food markets and value chains to improve their livelihoods (Christoplos et al., 2012; Sikhweni & Hassan, 2013). Extension programs in agriculture, fisheries, and aquaculture are seen as a link between farmers, fisherfolks, and other actors in rural development programs.

In its broad sense, extension refers to an informal educational function that relates to any organization disseminating information and advice to promote learning, although it tends to be associated with agriculture, fisheries and aquaculture, and rural development in general (Rivera & Qamar, 2003). According to Swanson et al., 2008; Egziabher et al., 2013; Davis et al., 2016, extension service has undergone a considerable transformation over time owing to the changing farmer and fisherfolks’ needs driven by the need for technologies that are modified to specific agro-ecological and the realization that not only technologies but also markets are main drivers of agricultural development. These changes were further necessitated by the accumulation of scientific knowledge regarding new technologies and production efficiency (Okoeo-Okojie & Edobor, 2013). For this reason, Kassie et al. (2011) argue that the adoption of research and improved technology is key to expanding agricultural productivity and production while mitigating rural poverty for sustained livelihoods.

In many developed countries, “extension” is the motive force for yield enhancements (Labarthe & Laurent, 2013). However, the efficacy of extension system in fostering capacity building, technological adoption, and ultimately improved agricultural outcomes depends on key factors such as the extension service delivery approaches, the governance, capacity, and management structures of extension system, including the underlying contextual factors, such as the policy environment, market access, characteristics of beneficiaries and weather conditions (Waddington et al., 2010). Furthermore, agricultural extension is perceived to be one of the most important keys in advancing innovation and development in rural areas (Davis et al., 2016).

The objectives of this study were to review (1) the role of rural agricultural extension programs in poverty alleviation, (2) the models and approaches used in rural extension service delivery, and (3) the enhancement of rural agricultural extension for poverty alleviation. To address these objectives, a review of previously published articles in scientific journals was conducted from October 2018 to April 2020. The selection and inclusion of articles reviewed in the paper were based mainly on relevance and importance to the topic as well as accessibility.
2. Results and discussion

2.1. The role of rural agricultural extension in poverty alleviation

Numerous studies have investigated the role of rural agricultural extension programs in poverty alleviation. For example, Dube (2017) revealed that these programs play critical roles in providing farmers’ awareness through improved technology adoption which leads to improved business efficiency and sustained livelihoods. Zaid (2015) reported that agricultural extension hastens the transmission and adoption processes of novel crop varieties and other innovations as well as enhancing farmers’ management skills. It also advocates for the efficient utilization of present technologies by enhancing the technological expertise of farmers (Dube, 2017). Therefore, the role of agricultural extension goes beyond just facilitating the transfer of technology and embedded training to helping groups of farmers with marketing approaches in their farming business. Besides, United State Agency for International Development (USAID) (2002) stated that extension helps tackle such rural community concerns as observing food safety and farming production, preservation of resources, nourishment, household health and education, youth improvement as well as joining hand with far-reaching service benefactors and other sectors. Christoplos et al. (2012) noted that for extension programs to be effective in responding to the demands of their clients, in the long run, the service providers ought to be accountable to the beneficiaries of the services or products.

Agricultural extension plays a significant role in community development. Its role in testing and disseminating research-based agricultural knowledge and technology to rural people results in improvements in the agricultural sector (Suvedi, 2011). According to Suvedi (2011), extension has facilitated the dissemination of information about new crop varieties, species of fish and livestock, and associated production and management practices leading to the improved socio-economic status of the rural communities.

Despite these important roles played by rural extension programs, Kabura (2014) reported that unless related to the production agenda of the farmers with the goal of poverty reduction in rural areas, extension service methods and their transfer mechanisms will have little impact. This is because farmers need information regarding the best technological application for agricultural productivity as well as post-harvest information that includes handling, storage, processing, and marketing (Glendenning et al., 2010). Furthermore, they need suitable and scientifically proven information concerning certain challenges like processing and market opportunities, livestock, and crop pest/disease management to overcome these challenges working against good farming techniques as well as proper information on the influence of a changing climate (Yusuf et al., 2013). Bringing it together, these studies suggest that the effectiveness of extension service delivery largely depends on whether the needs of the beneficiaries, the farmers in this case are met. Therefore, identifying farmer needs becomes a crucial step in the success of rural extension programs in alleviating poverty.

2.1.1. Identification of farmer needs in extension

According to Rivera (1996), information required by farmers varies depending on the groups of farmers and as such, it may be designed to target a particular category. For instance, information can be tailored based on landholding capacity or agro-climatic region. Moreover, diverse farmers possess different information search behavior based on reasons including education level and resource accessibility (Glendenning et al., 2010). Meaning that extension program delivery methodologies should constantly be adjusted to meet farmers’ needs in their particular environmental and socio-economic settings. Ultimately, as observed by Yusuf et al. (2013), rural farmers need knowledge on several aspects of rural incomes to enhance their livelihoods and reduce their vulnerability to poverty (Yusuf et al., 2013).

The Participatory method acknowledges the significance of indigenous and outside knowledge; farmers vigorously pursue relevant information suiting their needs, regardless of where it is coming
from (Kibwana et al., 2001). This usually involves asking the farmers in focus group discussions to describe their needs and the nature of challenges limiting their farming activities. Based on the responses of the farmers, an extension worker can identify their needs. However, Yadav et al. (2013) indicated that if the competence and general efficiency of extension workers are to be raised, then preparation, training, and organization of human resources surrounded by extension groups are indispensable.

2.2. Models used in extension service delivery
Several models in extension service delivery have been promoted over the years. However, initial versions with a direct approach such as transfer of technology (TOT) were criticized because they focused on the transmission of knowledge through a “top-down” direct method giving the farmers a passive role, and the inability to influence the variety of the socio-economic and bureaucratic atmospheres facing farmers and eventually in impacting attitude transformation (Birner et al., 2006; Petrics et al., 2015). Moreover, top-down methods were not designed to prompt the receptivity of extension workers to clients, thus, they characteristically have a narrow influence in isolated rural areas, on women folk, and generally on the poor population (Davis et al., 2010; Feder et al., 2010; Ragasa, 2014).

Demand-driven services are seen as one of the recent models for delivering extension program (Chiwasa & Kambewa, 2018). Apart from contributing to improved efficiency, decentralized and demand-driven extension programs have been advocated as one way of ensuring that extension programs are relevant to the needs of various stakeholders including farmers (Davis et al., 2009). Demand-driven extension service needs to meet three principles, namely, facilities are determined by user request; facility benefactors are answerable to the beneficiaries; and users are at liberty to decide who should provide the services they need (Chipeta, 2006).

Some authors are of the view that the demand-driven approach, if not correctly and prudently directed, may hurt communal benefits (Abdu-Raheem & Worth, 2016). This is based on the suggestion that complete dependence on farmer-led requests, can bring about the delivery of services that are of high-class but oftentimes with temporary significance to the farmers’ needs, deprived of the ability to consider long-lasting consequences like pollution of the environment (Abdu-Raheem & Worth, 2016). Neuchâtel Group (2006), on the other hand, maintains that the tendency for egocentric demands does not invalidate its part as an approach to convey community extension.

2.3. Approaches to extension service delivery
“Extension approaches” refers to how knowledge and skills are shared with farmers. This could be done through champion or model farmers, farmer field schools, training, and visits or participatory approach, to name but a few that have been used in extension (FAO, 2008). Although extension programs may be planned and conveyed in different forms, the ultimate goal remains the same, which is to increase farmers’ productivity and income (Waddington et al., 2010). On the other hand, extension programs perform a significant part in enhancing the flow of data from farmers to researchers (Anderson, 2007). Therefore, researchers have advocated for extension workers utilizing diverse approaches and tools to satisfy farmer’s demands (Davis et al., 2016; Rivera & Qamar, 2003). This is because extension service is multi-disciplinary and it combines educational methodologies, communication, and group techniques in promoting agricultural rural development (Davis et al., 2016; Rivera & Qamar, 2003). In this section, numerous approaches to delivering agricultural extension services in rural have been discussed. However, the selection of any given combination will depend upon the target farmers’ socio-economic and agro-ecological set-up.

2.3.1. Individual farm visits
The main purpose of an individual farm visit is to identify and analyze the main problems affecting an individual farmer and to provide advice on the best actions (Davis et al., 2016). The individual farm visit approach is critical in extension service delivery and development. An extension worker
may also visit an individual farmer to learn about innovative farm practices or research conducted by a particular farmer. Whatever the purpose of the visit, the visit usually covers a wide range of activities. Individual visits also enable extension workers to relate with other members of the farm household since different members may have different perceptions of problems that require different potential solutions. Field workers should encourage the participation of all family members to be part of the extension process. In this way, further opportunities for the involvement of women and youths in local extension activities are created. Sometimes, a visit may be of an emergency in nature where the extension worker is required to provide on-the-spot advice, for example, to diagnose crop, fish, or animal disease outbreaks at the farm of a particular farmer (Davis et al., 2016).

Although individual farm visits are very important in establishing rapport with farmers in the area and building trust and confidence in the extension service, they are rather costly, requiring careful planning, and cannot be used as an effective method for reaching larger numbers of farmers. Moreover, an extension worker risks arousing resentment among the farmers if a single farmer is frequently visited compared to others. However, Nduru (2011) reported that individual farm visits were the most preferred extension method by farmers in Kenya.

2.3.2. Training and visits (T and V)
Training and Visits (T&V) is among the earliest methods which concentrated on the transmission of knowledge through a top to the bottom, one-size-fits-all approach. It engaged diverse devices like frequent training of extension workers as well as consistent field visits by contact farmers (Davis et al., 2016). This method had been based on the supposition that methodological information is deficient among farmers for growing productivity, therefore the resolution had been to offer farmers with contemporary practical information. In the course of knowledge transfer, subject matter experts provided teaching to forefront extension workers on modern yet comparatively easy practical subjects. The extension workers would thus advance to teach farmers and/or farmer groups modern skills. The advantages of T&V include frequent farm tours, constant teaching of extension workers, and a touch of competence by extension workers (Davis et al., 2016). Its weaknesses had been its top-down nature, unbending, and non-sustainable (Chambers et al., 2013). However, it has been used by several government extension programs in third-world nations such as Nigeria (Hamisu et al., 2017).

2.3.3. Farmer to Farmer (F2F) approach
According to Scarborough et al. (1997), Farmer-to-Farmer (F2F) extension is the delivery of knowledge and information by farmers to fellow farmers, usually using lead farmers and farmer instructors. In this approach, farmers nominated to be principal farmers are usually named model, master, or lead farmers, and are selected founded on their agricultural proficiency (Dube, 2017). Sometimes they are referred to as “farmer promoters” or “trainers”, highlighting their interacting and training abilities. F2F is regarded as a worthwhile approach to technology dissemination built on the belief that farmers circulate technologies between peers more proficiently compared to visiting extension workers (Kiptot & Franzel, 2014). Moreover, it can spread to many farmers without much expense, and farmers have an increased degree of confidence in their colleagues including the apparent greater sustainability. Bentley et al. (2013) and Hird-Younger and Simpson (2013) argue that farmers are more open to trying new technologies once they are recommended by trusted and reliable sources. Kiptot et al. (2006) further indicated that the F2F method enables farmers to devise improved choices, provide feedback to scientists as well as legislators. However, the sustainability and scalability of this approach require community and government intervention support (Meena et al., 2016).

2.3.4. Farmer field schools (FFS)
Christopoulos et al. (2012) described farmer field schools (FFS) as a participatory approach of teaching, scientific development, and diffusion founded on adult-learning fundamental principles such as pragmatic. In this approach, the farmers gain knowledge through seeing whatever is
taking place on the ground and forming groups where they talk about whatever they have grasped, and also through practical field management through to harvest (Nduru, 2011). Through group interactions, those who attend are equipped with management, leadership, and communication skills and thus, enhance their decision-making capabilities (Davis et al., 2016). A portion of the farmers who take part may be chosen for further training to qualify them for the role of Farmer-trainers and be offered accredited support like teaching material as they engage in their role. Davis et al. (2016) noted that ongoing comprehensive training needs substantial resources both human and financial. As such, there is a need to engage farm field schools for social network formation, empowerment, elaborate practices et cetera.

2.3.5. Participatory extension approach (PEA)
The significance of participation by farmers in rural agricultural extension programs both as a means to an end and itself as a way of ending poverty is a widely understood phenomenon in extension (Kofi et al., 2015). This approach assumes that farmers have much wisdom regarding food production from their land, however, their production could be much improved by learning more of the external knowledge (Kennedy, 2009). The extension workers must aid with a comprehensive situation analysis by the farmers themselves at the commencement of their working relation (Kennedy, 2009). In this approach, the extension worker offers practical information and know-how that is convenient in resolving the recognized problems after the farmers identify the sources of their problems and have known the most demanding ones. Farmer involvement in extension necessitates prioritizing or providing them with actual possession and responsibility of community extension organization (Bembridge, 1999). For this approach to work well, extension workers should also have good analytical, pedagogical, and facilitation of skills since it depends on the conducive political and administrative environment.

2.3.6. Commodity approach
The commodity approach is mostly planned via private sector organizations. In this approach, the production scheme is vertically combined from the contribution source to the knowledge acceptance and selling of the harvest (Hamisu et al., 2017). Farmers produce a particular amount and value of a crop, livestock, or livestock products, and trade with the firm to which they are affiliated. In response, the firm delivers inputs, credit and information amenities, excellent supervision, and marketing facilities. For sustainability’s sake, there must be a better and mutual flow of information between administration and extension workers, and farmers which are ultimately vital in creating a profitable association fruitful and valuable to all involved parties (Kennedy, 2009). In some cases, it is referred to as contracted farming (Mukasa et al., 2016). Its benefits comprise great earnings on crops or livestock, growing the revenue of farmers and their practical and decision-making abilities whereas decreasing farmers’ threats and worries. It may moreover offer small and intermediate farmers with admission to lucrative ambitious markets to farming resources, skills, and guidance from which they would else be omitted. However, the information material is restricted to the practical and managerial or business side of the specific product.

2.3.7. Transfer of technology (TOT)
A lot of extension schemes depend on innovations and data that is either obtainable or can be obtained to be utilized by farmers. The TOT extension method depends greatly on the direct perception of knowledge transmissions, such as the transfer of modern innovations and information produced by experts, scientists, and other specialists. It is conveyed to farmers by agricultural extension workers to enhance production revenue through a top-down mechanism (Suvedi, 2011). The approach was considered on the supposition that farmers are void of practical understanding for growing yield, therefore the answer was to offer them up-to-date practical information (Kennedy, 2009).

The TOT method has, however, developed in the recent past by adding response schemes with farmers and scientists letting extension workers deliver responses to the investigation teams on the requirements of the farmers, ensuing in resolutions that aim for particular requirements or
demands (Davis et al., 2016). It is the commonest agricultural extension approach used in third-world nations such as Ghana (Suvedi, 2011).

2.3.8. Farmer-based extension organizations
In most developed nations, farmers’ organized associations have instituted and run extension agendas in agriculture to attend to the desires of the participating farmers (Suvedi, 2011). The extension schemes usually work under diverse administrative arrangements as well as with diverse sources of monetary assistance subject to the country. Generally, the members of these associations, and not the government, control the functioning of the extension scheme (Suvedi, 2011). In some situations, however, participants may pay part of the cost of extension programs and the government sources provide the matching support. This approach is commonly used in China. The success in this approach requires a high level of trust and confidence among the farmers since group members are the ones involved in management.

2.3.9. Information and communications technology (ICT)
ICT as an extension methodology can accelerate the procedure of agricultural knowledge transmission from research and development institutions to farmers (Dillon, 2012; Duflot et al., 2007; Tata & McNamara, 2016). ICT increases acceptance of agricultural innovations by aiding farmer education, problem-solving, and ease of access to lucrative marketplaces for their produce (World Bank, 2011). The use of ICT in extension service delivery is seen as a supplement to traditional extension methods rather than a replacement (Anastasioa et al., 2010). However, some extension workers tend to utilize ICTs for individual gain and enhanced specialized efficiency while they go on utilizing conventional communication approaches with farmers (Strong et al., 2014).

Some researchers argued that ICTs might ultimately substitute conventional knowledge and teaching schemes utilized by extension facilities and more so change the duties of extension workers (Lasley et al., 2001). According to (Akpabio et al., 2007; Munyua et al., 2009), the utilization of ICTs in extension service delivery among extension workers is influenced by poor ICT infrastructure development, expensive transmission equipment, costly radio/television productions, costly interconnectivity, and electricity hurdles. Socio-economic factors such as income, gender, and age are seen as the major factors hindering the acceptance of ICTs by rural farmers (John et al., 2014; Mwombe et al., 2014).

2.4. Selection of an extension service delivery approach
In the above section, we have discussed numerous approaches used for delivering extension programs to enhance agricultural productivity. Nevertheless, several circumstances may affect the effectiveness of these extension approaches in delivering the required services. These factors could include the costs associated with a given approach, the type of the targeted farmer(s), and the topographical position of the farmer(s) as well as socio-economic cultural settings of the farmer(s).

Therefore, Davis et al. (2016) noted that the selection of a suitable approach should be based on the goal of the project the extension worker wants to accomplish (Davis et al., 2016). One should consider whether the goal is to improve food security, connect farmers to the marketplace or equip women folks? (Davis et al. (2016). This is based on an understanding that certain approaches can attain particular aims better than others, and the extension workers must adjust the methods to the specified aims (Davis et al., 2016). For example, if the goal of the extension worker is to promote technology transfer among farmers, the Transfer of Technology (TOT) approach would be the best. On the other hand, an extension worker who is interested in linking farmers to the market may consider using the Commodity approach to deliver an extension program. Therefore, the goal of service delivery must be defined before selecting the approach.

2.5. Tools used in extension service delivery
“Tools” refers to the technologies used to transmit knowledge and information, such as radio, podcasts, mobile phones, and demonstrations, etc. Extension tools are hence separated into
individual (one-on-one services through face-to-face interactions, phone, or Internet) as well as
group approaches (Davis et al., 2016). According to Davis et al. (2016), group approaches may be
used in strategic extension approaches, such as farmer field schools, and may include private
demonstrations or via the press. Demonstrations are a crucial tool for an extension, especially
when teaching applied procedures (Davis et al., 2016). Feeding practices may be illustrated at the
farmer’s fish ponds, at a study site, or an Agricultural demonstration ground. Demonstrations have
numerous disadvantages though they can be useful and influential. One disadvantage is that people
need to be present at the illustration site, thus inflicting traveling expenses on farmers which may be
inconvenient. A further drawback may be the lack of self-confidence by the farmers to perform the
same activity being demonstrated due to the feeling of lacking necessary resources or thinking that
the demonstrators have perhaps special expertise that they cannot acquire (Davis et al., 2016).

Mass media is an influential tool; in particular, transmission and digital media are capable of
getting through to masses of people. It is imperative to consider the intended societies’ accessi-
bility to mass media and its degree of and access to education and technology when selecting
a technique (Davis et al., 2016). The usage of images in media, such as booklets permits knowledge
to be disseminated over languages and to those who are not able to read (Nduru, 2011). A brief
and modest note can contain great influence compared to a wordy or complex message. With its
capability of spreading to a large number of people of mass media, can be split into the following
groups:

- Transmission media like radio and television permitting for the long-distance conveyance of
  information;
- Digital media require accessibility to computers and mobile phones with the internet. This
  comprises social media sites like Facebook, Twitter, YouTube, and others, all of which can be
digitally utilized to promote knowledge and disperse facts;
- Outside or outdoor media in the system of great advertisements positioned on big structures
  or in strategic positions, such as publishing media, events, and public speaking.

Videos can aid to meet the hurdle of disseminating knowledge to farmers and getting to the
underprivileged and marginalized, including women and youths. They could be more successful
compared to written words because it can be entertaining, farmers can see the application of the
topic at hand and the video may be translated into diverse native languages making it even more
effective in disseminating information to a specific group. However, one of the weaknesses of
a video is its need for power and labor making it costly to make compared to flyers, posters, or
other printed media (Nduru, 2011).

2.6. Trainer’s training
Research by (Saleh et al., 2016) points out that the training of extension workers in agriculture is
an essential step in the general farming production course. Training of trainers is the prerequisite
for effective implementation of technical solutions in the field and an important step for their
dissemination (Braga et al., 2001). One of the major tasks of the trainer is to assist the group so
that participants can support one another after the training session is over and experiential
learning activities are supposed to be developed and implemented (All Agricultural Commodities
Programmes (AACP), 2010). The basic objective of extension is to build human capital, to increase
the technical and managerial skills of farmers, and to expand their capacity to learn (Kahan, 2013).
Furthermore, Kahan (2013) observed that access to technology and markets alone will not make
a farm successful or profitable. Therefore, farm management specialists should work closely with
front-line extension workers by providing them with all the requirements so that they can work
more effectively with farmers. Hence, extension trainers should be trained in such areas as
communication and facilitation skills, and farm management as well as practical skills in applying
the concepts and tools in rural areas (Kahan, 2013).
Training needs of the trainers must first be assessed to equip them with the necessary skills. (Saleh et al., 2016) stated that the training requirements are the primary phase in creating an operational training platform. According to Youdeowei and Kwarteng (2006), training needs is the variance between the obligatory degree of a person’s capability and his current degree of proficiency. Sharif (2006) argued that training needs might be a result of a deficiency of skills, information, or understanding, or it may come from an alteration in the place of work and/or to advance professional development. In other words, it is a lack of skills or capabilities, which can be reduced or eradicated through education and development (Saleh et al., 2016).

2.7. Effectiveness of extension service delivery
Sometimes the motives for effective service delivery will vary, including the suitability of the consultative approaches, the capability and number of extension workers, and the administrative and governance structures of the organizations providing the extension program (Birner et al., 2006). Effectiveness may also be influenced by the degree of feedback and the mechanisms of information delivery from farmers to the study and extension scheme, hence the duty of farmers in expressing demand and their capacity to use their freedom of speech (Waddington et al., 2010). No wonder, Nnadi et al. (2013) suggested that for the extension to effectively meet people’s needs, it should be decentralized while empowering communities as well as people in the same vein. Furthermore, a participatory extension program should enable farmers to determine and agree with transformation.

2.8. Evaluation of extension programs
Extension programs and policies are designed to reach certain goals and beneficiaries (Suvedi, 2011). Therefore, evaluation is very crucial in assessing the programs and policies and helps determine if goals have been achieved or benefits have been realized by the intended audience. Additionally, because the agricultural extension has an educational delivery and technology transfer mission, evaluation in extension focuses on changes in awareness, knowledge, skills, and/or behaviors in targeted audiences, whether they are individuals, families, workgroups, organizations, or communities (Suvedi, 2011). Overall, extension service delivery evaluations should provide findings and conclusions that can assist extension workers in designing suitable extension programs that can meet the demands of farmers (Kahan, 2013). Besides, Christoplos et al. (2012), noted that evaluations should assess how well extension agencies have assisted farmers to achieve their own goals and to look after the public interest, and rise above the implicit supposition that “value” should simply be measured in terms of production increase and that is very common in many current evaluations of extension interventions.

3. Conclusion
Rural extension programs are very crucial in poverty alleviation programs as they have proved to be the impetus for productivity enhancement in farming activities in many countries. They keep farmers updated with new knowledge and skills to address the emerging challenges in their farming activities and at the same time enable the researchers to design suitable technologies applicable to the requirements of the farmers. However, the most challenging task for an extension program is to continuously be relevant in a world that is rapidly changing, bringing in new challenges for the farmers. Different extension service delivery approaches will be used in different situations. Therefore, extension programs should be flexible enough in their approach to continue being relevant and sustainable. We recommend future studies to focus more on recent demand-driven approaches that allow the farmers to participate in identifying solutions to their problems.

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