# Is Farming Income Sufficient? The Role of Agricultural Extension in Diversifying Smallholder Livelihoods for Sustainable Development

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Abstract: With the current pressing issue of climate variability and policy change, a more robust extension system is considered as a constructive way to diversify livelihood of rural farming families. An increase in agricultural productivity has a ripple effect on rural economy; to provide of employment opportunities and to supply labor surplus for industrial and service sectors.
However, this enhanced productivity is poised decline due to emerging threats such as pests, diseases and climate change. This decline has got serious implications on livelihood diversification strategies and food security which is likely to undermine full realization of global call for zero poverty among third world countries. Hence, the current review paper examines the transformative nature of agricultural extension in diversifying the portfolio of economic activities and social capital of small and marginalized farming families. It does this by selecting both conventional and non-conventional documents including original research and review articles published between 2010 and 2024. On poverty reduction, this paper underscores the importance of diversification approaches towards improving the living conditions of the farming communities by increasing their income and reducing risks related to animal and crop failure. It concludes that when agricultural productivity is high, more of the rural people tend to engage in non-agricultural activities for income generation. Hence, urgent need re-structure and strengthen extension coordination units with all players along various value chains included to secure sustainable livelihood behavior.

Keywords: Agricultural extension, livelihood, economic activities, diversification, sustainability and third world counties

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## 1. Introduction

Livelihood diversification is essentially perceived to be an approach by which human beings construct various forms of economic activities and social capital in bid to meet basic needs and enhance living standards[1]. It is one of the approaches of both risk and vulnerability reduction among the poor-resourced people and marginalized population[2]. Venturing into more than one economic activity is seen as a strategic mechanism geared towards response to emerging opportunities that dignify human beings. Enhanced development in agricultural and allied sectors has been identified as key driver to livelihood diversification especially in the Global South where rural families live in extreme poverty[3].

In light of the above, an efficient agricultural extension system is needed to accelerate production systems in the presence of other factors such as transport, incentives, markets, harvesting and post-harvesting

technologies and supply chain management. This is due to the fact that smallholder agriculture is the heart of rural economies and plays important role in providing diverse livelihood opportunities to much of Global South burgeoning young labor force[4]. Efficient agricultural systems require less labor force; therefore, labour surplus could be released into the non-farm sector. Thus, attempts to expand extension services beyond the traditional technology transfer and adoption to facilitation for broader development initiatives is of great importance[5]

As well, the idea of sustainable livelihood is aligned with the global clarion call of poverty reduction, income growth, food security while conserving the natural resources[6]. This idea has gained momentum due to increased exploitation of natural resources such as land and forest to meet fundamental needs of ever-growing worlds' population. The importance of extension science in facilitating sustainable livelihood practices is crucial in this era of climate variability and change[7]. It is therefore believed that successful application of extension services is likely to give outcomes which intend to improve quality of lives of the farming families.

To this end, many third world countries have put concerted efforts to reform their agricultural extension delivery systems with a view to include all actors across various value chains[8]. This reform aims to address concerns such as marketing, processing, environmental sustainability, harvesting and post-harvesting management, pest and disease diagnostics and risk management through involvement in non-farm activities[9]. Thus, facilitates an inclusive approach which is essential for creating diverse economic activities and social networking leading sustainable development among the farming families.

The current review paper therefore, provides a broad examination of the transformative power of agricultural extension in diversifying the portfolio of economic activities and social capital of small and marginalized farming families. It aims to achieving this by addressing two research questions:(1) How does agricultural extension influence smallholder livelihood diversification strategies in third world countries? (2) What are the contributions of livelihood diversification in reducing poverty among smallholders in third world countries? It is expected that the findings from this review could potentially suggest better ways of securing a sustainable livelihood diversification among the rural population.

## 2. Materials and Methods

### 2.1. Research Design

The study adopted a systematic review method to carry out a broad examination of the transformative power of agricultural extension in diversifying the portfolio of the third world countries. This method was used to search existing literature confined to conventional and non-conventional documents including original research and review articles published between year 2014 and 2024. The literature search focused on addressing the two research questions above. The collected studies were summarized and finding interpreted to provide answers to review questions.

### 2.2. Data Collection Methods

To start with, a regular search on Google Scholar was carried out during the review period to ensure newly published documents within the scope of the current study were included. Keywords such as "agricultural extension, livelihood diversification strategies", "rural poverty and reduction in third world countries" were used in the

search. Besides, other search terms such as "smallholder livelihood," and "extension activities," were included to examine other relevant literature. The collected literature was closely examined and references cross-checked to find out other relevant studies.

**2.3. Data Extraction**

Only documents published in English were downloaded and further screened to ascertain its relevance as regard to review questions under consideration. Key literature on agricultural extension, livelihood diversification strategies and its contribution on the livelihood of smallholders with a particular focus on rural set up in the third world countries were selected. The diversification strategies included on-farm or off-farm activities among the farming families. The data obtained was synthesized from the perspective of opportunities geared towards improving income generation, enhanced food production, poverty reduction leading to better living conditions.

**3.Results and discussion**

**3.1 Role of Agricultural extension in the context of livelihood diversification**

Findings revealed that agricultural extension is a critical factor that contributes to livelihood diversification with a combination of on-farm, off-farm, and non-farm strategies. It plays a crucial role in ensuring that new technologies developed from the labs are translated and utilized on the lands of local farmers [10]. This role starts with knowledge sharing, information management, attitude change, perception and ends up with human enrichment. Thus, it sets a foundation for enhanced transformation and sustainable agricultural growth by building a broad-based awareness for new interventions, utilizing the current developments in ICT space related to mobile-phone apps and web-based portals [11]

As part of human enrichment, agricultural extension service aims to create a solid collaboration and partnerships with non-governmental organizations (NGOs), private agribusiness input suppliers, financial institutions, and industry[12]. Strengthening such partnerships helps to avail credit facilities and access to markets that benefit the smallholder farmers in their on-farm and non-farm activities[13]. In third world countries, many extension service providers have including information suppliers have added financial support component to their service delivery units, hence gradual shift to non-farm livelihood strategies[14]. However, as the agricultural sector gradually recoils to the non-agricultural sector, fewer private extension service providers get to be aware of the actual needs of the farmers[15]. This calls for public extension systems to engage more in creating a broad-based awareness for improved practices with a view to meet the information needs of the farming community[16].

**3.2 Influence of agricultural extension on smallholder livelihood diversification strategies**

Table below shows the potential of agricultural extension in boosting farmers' perception, knowledge, income and promote sustainable agricultural management practices. A secured perception on land ownership and farmer group membership has a positive influence on farming families' engagement in both agricultural and non-agricultural activities[17]In addition, the use of efficient extension dissemination pathways has got positive influence on farmers' satisfaction as regard to various livelihood diversification strategies[18]. A more satisfied farmer tends to engage in off-farm employment activities to gain income and experience[19].

Creating awareness and partnerships with financial service providers promote access

to credit facilities smallholder farmers. Unlocking capital constraints enables farmers to make timely and regular purchases of farm inputs which they could not afford to buy using their own resources[20]. Inclusion of financial education during empowerment programs could propel farming families to engage in non-farm income generating activities such as vending [18] . This is a key livelihood diversification strategy especially with the booming population which exert pressure on farming land. It is projected that the farm size will grow smaller to create space for human settlement hence urgent need to create more of the non-farm income activities[21]. Ultimately, these activities will provide form of insurance against the farming threats and reduce over-reliance on land resources[22].

**Table: Influence of agricultural extension on smallholder livelihood diversification strategies**

| Variables influenced | Direction of influence | Outcome of influence | Type of diversification strategies influenced |
|---|---|---|---|
| Knowledge, Attitude and Perception | Positive | Proper use of farming resources | Both farm and non-farm activities |
| Farmers satisfaction | Positive/Negative | Motivation for participation | Off-farm activities |
| Access to financial services | Positive | Timely and regular purchase | Both farm and non-farm activities |
| Rural migration | Positive/Negative | Reduce pressure on land resources | Off-farm activities |
| Gender equality | Positive | Women inclusion in economic activities | Off-farm activities |

As well, through extension service, a sharp increase in the total agricultural output has been reported with economic rates of returns[23]. An improvement in agricultural productivity ushers in urbanization and industrialization, thus, rural families gradually opt to partially leave agriculture and enter to non-farm employment in cities and towns [24]. The remittances from migration are used to purchase farm inputs and for improvement of living conditions. This has prompted many third world countries to continue revamping their agricultural extension systems in order to meet national food security requirements in line with sustainable development goals[25]. With the global emphasis of gender equality and equity, extension service through ICT tools is poised to reduce gender bias by providing timely agricultural information to women in their farms[26]. Well informed women are motivated to participate in economic and social networks including agricultural training. Women empowerment is an important ingredient in building knowledge, as well as skills, which in turn has a positive influence on the choice of livelihood strategies in the face of climate variability[27]. Women are more diversified than men by a way of involving in many income generating activities[28]. However, this interactive engagement is likely to bear more benefits with inclusion of financial, social networks for sustainable livelihood diversification[29]. Thus, urgent need to design extension models to serve people of all kinds including women to benefit from economic resources.

### 3.3 Contributions of livelihood diversification in reducing poverty among smallholder farmers

Diversifying the means of livelihood for smallholder and marginalized farmers beyond agriculture plays an important role in reducing poverty [11]. As indicated in the figure below, on-farm diversification approaches improve living conditions of the farming communities by reducing risks associated with crop failure[30] . On the other hand, non-farm diversification activities target to provide labour to both wage employment and self-employment[31]. Such activities include trading, handcrafting, causal daily laborer, local beer brewing, fish processing, pottery, retailing and vending.

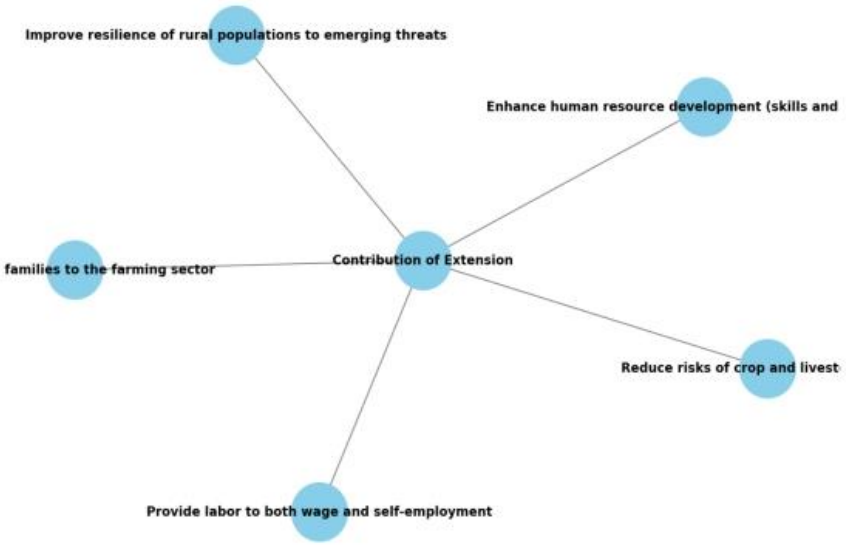


*Figure showing the contribution of livelihood diversification to poverty reduction (source, author 2024)*

Engaging in non-farm activities contributes to absorption of rural labor into service industries thus reduce rural poverty index [18]. Smallholder farmers who engage in these activities are more likely to have sustainable livelihood and meet their fundamental needs of life[32]. In addition, they occupy an advantage position to withstand the unfavorable effects of climate variability and policy change[33].

In times of production threats like drought, they are likely to liquidate their assets to shield them from extreme food shortage and reduce income uncertainties[34]. When there is virtually no farming, they migrate to the cities for non-farm income generating activities [33] . However, scarcity of non-farm employment opportunities in many rural set-ups pose a big challenge in securing sustainable livelihoods[35]. As a result, members of the farming families who migrated to cities usually return to their farms when farming season comes, hence unstable livelihood diversity behaviour[36]

Similarly, agricultural programs such as agrochemical subsidy have served as an opportunity to pull most of the rural families into the farming sector[37]. This has resulted into both crop and livestock diversification which include growing of different varieties of crops as well rearing different breeds of animals. For instance, intercropping cereals with legume while at the same time, keeping livestock in the same piece of land has been adopted by many smallholder farmers as risk coping strategy[38]. When one enterprise fails, the smallholder farmer may enjoy income from another enterprise. Hence, income generated from farming activities tend to be stable leading to poverty reduction among rural populations.

## 4. Conclusion

Strong agricultural extension systems have the capacity to propel smallholder farmers to intensify production systems, leading to steady growth and employment opportunities. When agricultural productivity is high, more of the rural people tend to engage in non-agricultural activities for income generation. These diversification strategies improve income status of the people leading to improved living standard. However, lack of access to necessary resources to intensify agricultural activities and non-agricultural activities in the third world countries pose a big challenge to this endeavour. In addition, inadequate training and empowering programs hinder rural population especially women farmers from undertaking non-agricultural activities.

Based on the above findings, it is recommended that the agricultural extension delivery units should be strengthened through proper collaboration and coordination with all players along various value chains to ensure the needs of rural farmers are met. This strengthening should be geared towards achieving economies of scale, prudent use of public resources and increasing efficiency of extension services. Furthermore, there is an urgent need for the governments to formulate friendly policies to allow rural households access credit facilities at the rural levels with ease. These, together with women economic empowerment and more funding to extension service would go a long way in securing a sustainable livelihood diversification.

## Ethical Statement

As this manuscript does not involve research on humans or animals, nor does it include vulnerable populations, an ethical statement is not applicable.

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**Ethics approval**

Not applicable.

**Consent for publication**

All the authors have read and approved the work.

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