



Review Article

Role of Agriculture Cooperatives to Smallholders: A Review from Farm Sustainability Perspective

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Article Information

Received: 29 June 2022
Revised version received: 30 July 2022
Accepted: 01 August 2022
Published: 31 August 2022

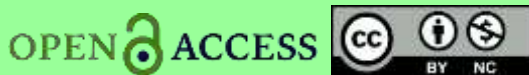
Cite this article as:

J. Dhungana (2022) *Int. J. Grad. Res. Rev.* Vol 8(3): 40-49.

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Peer reviewed under authority of IJGRR
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Abstract

The cooperative sector plays a significant role to improve the economic condition of rural farmers by providing a range of services. However, farmers fail to get better margin prices than vendors due to poor marketing network. In this context, it is realized to unite the farmers in the cooperative, thereby; they can enhance their production skills and market negotiation power. Thus, this paper seeks to examine the role of agriculture cooperatives, especially in the case of smallholders in Nepal and other developing countries. The secondary data sources from literature, reports, and books were used to synthesize, analyze, and conclude the paper. It focuses on empirical findings concerning the role of agriculture cooperatives to the smallholders from farm sustainability aspects, namely: economic, environmental, and social. Further, the study provides the outline of the status of agriculture cooperatives in Nepal, determinants of farmers joining, and challenges faced by cooperatives. The findings conclude the major roles of cooperatives are: to improve the economic status of the farm in terms of productivity, profit, and income. Social capital formation through cooperatives is vital, together with this; farmers perform sustainable agriculture practices. Despite this, some challenges regarding management, governance, and institutional exist in cooperatives. Ideally, these cooperatives need to be prioritized for capacity development and emphasized to produce market-oriented commodities in order to provide an advantage for smallholders. Moreover, the relationship in different aspects of agriculture cooperatives and farms needs to be further investigated to explore in detail

Keywords: Economics; Empirical; Farmer; Member.

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Introduction

The agriculture sector contributes 26.2% of gross domestic product and 60.4% of the population merely depends on agriculture in Nepal (MoF, 2021). Also, the average size of the farm is 0.6 ha per household (GC and Hall, 2020), whereas 80% of farmers have subsistence farming (Begho, 2021; Holmelin, 2017). It implies that farmers produce food for family consumption only. The bulks of the poor in developing economies live in rural areas and are regarded

as active smallholders (Lamichhane, 2022). The proportion of commercial-scale farmers is very low as few numbers participate in the market.

Previous studies indicate that the smallholders have tackled the issues of access to credit, timely quality inputs (Abraham *et al.*, 2022), labor shortage (Adhikari *et al.*, 2021), and extension services (Bachkain and Karki, 2022).



The delivery of agriculture extension activities provided by public institutions is limited. It is explained in the extension policy review of Nepal, by Uprety and Shivakoti (2019), state the public extension delivery system is unable to meet the demand. The fact is that the inadequate capacity of extension workers and they suggest for collaborative work. It was expected that the private sector would step to fill the gap; however, the expectation has not been met. Further, literature on market access emphasizes how imperfect markets present in developing countries. They have poor infrastructure facilities, price uncertainties, and weak institutional mechanisms (Malla *et al.*, 2021; Ebata and Hernandez, 2017). It leads to low bargaining capacity of farmers and high transaction costs. The problem is not limited to this; farmers usually receive less price margin than middleman. More importantly, the heavy import of agricultural commodities from India would lead to problem in sales, where consumer price is higher for Nepalese commodities than Indian ones due to low volume. Even, farmers are less aware of the benefits of collective marketing as well.

Hence, to combat such problems, cooperative is one of the potential solutions to improve their farm status and increase their selling capacity. Farmers may engage in sustainable production practices through agriculture cooperatives (Ma *et al.*, 2021). Cooperatives have a particular identity that sets unique organizational principles, for example, democratic decision-making, equality, and solidarity (Singsee and Suttawet, 2021). This is the way to reduce market inefficiency and subsequently enhance the farmers' access to markets, information, and technology (Huang and Liang, 2018; Miller, 2021; Sharma, 2020). Besides this, cooperatives have been gaining importance in recent years, especially in rural areas. The local government has the legal provision for the mobilization of cooperatives in Nepal (Bishwakarma *et al.*, 2021). Cooperative, is, therefore, viewed as the third pillar of economic development (Paudel and Acharya, 2021). Thusly, cooperatives may act as key players for farmers in the delivery of extension services and marketing as well. It serves to bring farmers into a single platform. They are perceived as an effective institutional mechanism to safeguard the smallholders.

Moreover, to our knowledge, no review studies published to date investigated the impact of agriculture cooperatives on economic, social, and environmental aspects in case of Nepal. This is the reason of why this study is important. In this regard, the overall objective of this review paper is to examine and discuss the existing empirical literature on the role played by agricultural cooperatives for smallholders' farm sustainability in Nepal and other developing countries. The specific objectives are i) to assess the status of cooperatives in Nepal and the determinants of farmers joining into cooperatives ii) to analyze the role of cooperatives for smallholders in terms of economic, social,

and environmental perspectives, and iii) challenges faced by cooperatives. The paper comprises five sections including the introduction in first section; section two presents the status and determinant factors of farmers joining into cooperatives; section three discusses the role of cooperatives on smallholders' farm sustainability; section four explores the challenges faced by cooperatives and at last, section five summarizes and draws the conclusions.

Status of Agriculture Cooperatives in Nepal

In the initial time, *Dharma Bhakari* (collection of grain) and *Guthi* (a form of social institutions) were the common property of Nepalese societies, where the people from the same community operated together. Characteristics of these historical common informal institutions are almost identical to the primary form of cooperatives. Gradually, the government realized the need for community-based organizations for economic, cultural, and social development. Then, the department of cooperatives was established under the Ministry of Planning, Development, and Agriculture in 1953 (Ojha, 2019). Then, a cooperative was initiated from Rapti valley in Chitwan, with the aim of rehabilitation of flood-suffering people (Paudel, 2022). Later, the constitution of Nepal recognized cooperatives as the third pillar of economic growth. The government has planned to promote it as a means of economic and social development. At present, there are 29,886 cooperatives with 7,307,462 members, and more than 88,309 people are employed directly in the sector (GoN, 2021). Out of them, 38.8% belong to agriculture activities (Neupane *et al.*, 2022). The statistics data of the Government of Nepal recorded there are 13,578 savings and credits, 4,371 multipurpose, 10,921 agriculture-based, 1,658 dairy, 108 tea, 193 vegetable and fruit, 155 coffee, 93 honey, 45 sweet orange, and 48 sugarcane cooperatives remain in the functional stage in the country (GoN, 2018). They do play the main role in saving and credit services, agriculture production, and collective marketing, but few of them engage in primary processing and value addition activities.

Determinants of Farmers' Joining into Cooperatives

The efficiency of organizational management depends on the participation of its members. A recent study shows the membership of farmers in cooperatives is an increasing trend (Dhakal *et al.*, 2021). It happens if there is social trust built between members and cooperatives (Mishra and Bhatta, 2021). This ease to take the farmers' decisions because of the similar nature of people involved. Kiprop *et al.* (2020) conclude that the participation in group activities is determined by services of inputs, credit, and infrastructure facilities. Easy access to production inputs and higher net revenue motivate the farmers. This is supported by Kumar *et al.* (2018); they found a positive association between higher net income and membership.



Dhungana (2022) finds that relative to non-members, the probability of commercial vegetable production is 8.459 times higher for members. Previous research has documented from different regions such as Nepal, India, Kenya, Cameroon, and Nigeria on determinants of membership decisions. The family size, technology, access to information (Suvedi *et al.*, 2017), extension visits (Katuwal, 2020), higher yield (Kumar *et al.*, 2018), and marketing facilities (Kiprop *et al.*, 2020) affect the farmer's choice to enter into cooperatives. Experience in farming, timely payment (Balgah, 2019), and technology (Wossen *et al.*, 2017) remain the major factors for engaging as a member. These all inform the cooperatives provide a range of services to members' welfare in general. The details on the role of cooperatives are dealt in the following section.

Role of Cooperatives on Farm Sustainability

The concept of farm sustainability means the farming operations must be maintained for a longer period of time while taking care of the natural resources base (Hansen and Jones, 1996). In theory, Bashev (2016) defines that the farm is sustained, if it is able to balance its economic, social, and ecological aspects everlasting. The author genuinely relates it to the three dimensions of sustainability. According to Ellis (2000), a farm is sustainable if farm resources, activities, and access to these could be mediated by local cooperatives. So, this review helps to establish the link between its concept and empirical evidences, which is discussed below.

The Cooperatives' Economic Role

Considerable attention has been paid to the influence of cooperatives on the economic performance of members. The empirical literature shows the positive effect of membership on farm incomes (Tamang, 2019; Mojo *et al.*, 2017; Ona and Mukhia, 2020; Jha *et al.*, 2021). The farm income varies depending on the size of the farm. The farm income is relatively higher for small-scale farms (Hoken and Su, 2018). Researchers found different results in the study in Nepal. The evidence indicates that member farmers are able to sell 80% of vegetable produces in the market (Malla, 2021). The total agriculture annual income was four times higher for members than non-members (Dhakal *et al.*, 2021). Also, Mishra *et al.* (2018) found members obtained 70-76% higher net income from tomato farming. The authors argued that the higher return was not due to the price but due to the services delivered by cooperatives. So, providing an economic advantage to farmers is one of the remarkable parts of cooperatives.

Studies in various regions like Nepal, Bangladesh, Thailand, and Bhutan have documented the influence of agriculture cooperatives, which enable small-scale farmers to market access with higher prices (Kumar *et al.*, 2020; Sultana *et al.*, 2020; Kumse *et al.*, 2021; Dendup and Aditto, 2021). Ultimately, it brings to change the income level and

motivates the farmers for farm expansion. The results obtained in the study in Nepal, found the member farmers received higher prices in case of coffee (Poudel *et al.*, 2021) and milk (Rajthala *et al.*, 2020) than the non-members. It means the farmers involved in cooperative feel secure for their products.

Likewise, Manda *et al.* (2020) in Zambia and Zhang *et al.* (2020) in China observed the impressive role of cooperatives on farm productivity. Researchers suggest farmers to participate in local institutions, which are important to increase the farm profitability (Ma *et al.*, 2018; Mojo *et al.*, 2017; Ortega *et al.*, 2019; Puri and Walsh, 2018). Authors have noticed cooperatives as instrumental in providing both technical and financial support to farmers. A study conducted by Agarwal (2018) on the banana farm in Kerala India, resulted that the net profit from the collective farms was five times higher than individual farms. It highlights the substantial impacts of cooperatives for the financial viability of members.

Previous research emphasizes the role of cooperatives for increase the economics of scale (Rajthala *et al.*, 2020; Miller and Mullally, 2022; Tha *et al.*, 2021). They suggest for collective marketing, which is better than individual sales. It implies that collective action is the best way to increase the volume of sales; thereby it helps them for negotiating with buyers. It may assist to develop links between producers and upstream chain actors. Later, it ensures the payback system and develops a reliable market. The significant contribution made by dairy cooperatives in Nepal. They establish a strong market network across the nation and do value-addition (Shingh *et al.*, 2020). They connect farmers with insurance schemes (Risal, 2020). It provides non-financial services and creates employment opportunities in rural areas.

Recently, the researcher has examined the effects of membership on technical efficiency in ginger production in Nepal (Khatiwada and Yadav, 2022). It means the output could be maximized in a specific set of inputs. The finding is in accordance with Vaiknoras *et al.* (2020), who analyzed the spillover effect of seed producer members on non-members in the mid-hills of Nepal. The authors describe the adoption rate of new technology for seed production was increased among nearby village members. This ties in the report obtained by Koirala *et al.* (2019), indicate the member households have got the chance to share and exchange ideas regarding farming methods, fertilizer, and irrigation practices with others. This eventually helps to scale up for the adoption of innovative practices, definitely contributing to local development. Most agriculture cooperatives in Nepal do credit programs for farmers. It enables farmers to invest in agriculture production.

However, some contrasting viewpoints are described by some researchers in the study of agriculture cooperatives.



Choudhary *et al.* (2020) stated the cooperatives have less attention to farm upgrading in terms of quality and efficiency. They are more concerned with quantity rather than quality improvement. This is caused by the lack of commitment and effort from members' sides towards quality improvement (D'Amato *et al.*, 2021). A study in Nepal by Shrestha *et al.* (2020), they observed that value-adding activities in commodities are almost missing in cooperatives. Apart from this, cooperatives have other roles in encouraging members to adopt ecologically beneficial practices in agriculture.

The Cooperatives' Role to Adopt the Eco-Friendly Practices

Different aspects of eco-friendly practices and role of cooperatives can be found in the prior studies (Muench *et al.*, 2021; Mishra and Kattel, 2021; Chaudhary *et al.*, 2022). Authors report the members are more likely to adopt sustainable management practices such as agroforestry, rainwater storage, crop diversification, soil fertility improvement, and shed management. Similarly, the literature concludes that membership influences the adoption of organic farming (Sapbamrer and Thammachai, 2021; Lu and Cheng, 2019; Jena and Grote, 2022). Farmers get benefits from the services of group certification and product marketing. The cooperatives may facilitate as a mediator to utilize the local resources for local people through self-help schemes. It assists to increase income and protects the environment as well.

Furthermore, membership has a positive effect for the adoption of climate resilient technologies. Annapurna cooperative from Rupandehi Nepal serves as a local institution to provide climate-smart agriculture practices to members (Aryal *et al.*, 2020). They identified the practices adopted by farmers are: direct seeded rice, green manuring, use of stress-tolerant varieties of cereals, and laser land leveling. The cooperatives orient members to utilize the marginal land by planting fodder trees and use of farm byproducts (Neupane *et al.*, 2022). The empirical evidence proves the members adopted eco-friendly practices, for example, integrated pest management, soil solarization, and crop mulching (Kumar *et al.*, 2020). These practices certainly help to increase the soil fertility status, increase efficiency and contribute to mitigating greenhouse gas emissions.

Prior research in Nepal, reported the adaptive capacity is higher for members (Muench *et al.*, 2021; Adhikari *et al.*, 2022). Owing to the fact that awareness of the climate-induced disasters, access to credit, training, and technology provided by cooperatives. Another recent study on cocoa farming in Ghana asserts that being a member, increases the probability of adopting good agriculture practices (Frimpong-Manso *et al.*, 2022). They are more conscious of a safe and healthy food production system.

However, the intensification of agriculture in developing countries offers environmental pollution, which is thus ever increasing. The economic performance is better through cooperative activities, but environmental hazards are not taken into account while financing the infrastructure facilities like cold storage, cold chamber, and warehouse by cooperatives. There might be use of more chemicals and machineries. The research conducted in China by Liang *et al.* (2019), stated that farmers use an intensive amount of fertilizer, and pesticides contribute to land degradation. Nevertheless, other beneficial roles related to social capital formation are also important, which are presented below.

The Cooperatives' Social Role

A social benefit is a collective asset consisting of common norms, values, beliefs, and social ties. It largely inspires the exchange of ideas and facilitates technology dissemination through cooperation. Studies of cooperatives demonstrate the importance of membership in the formation of social capital (Lamsal *et al.*, 2018; Blekking *et al.*, 2021). They find the cooperatives not only foster an environment that is conducive to economic growth, but, lubricant to develop the self-help scheme, equity, solidarity, and democracy. This leads to benefits, especially, for socially deprived smallholder farmers (Tiwari and Nepal, 2018). A research report on dairy cooperatives in Himanchal India found that membership helped to enhance the operational efficiency (Tripathi *et al.*, 2019). They described that membership is not limited to income generation; it gives social prestige and security in the community.

Next, various studies investigate that membership has a better impact on rural livelihoods (Nepal and Tiwari, 2017), social trust (Mishra and Bhatta, 2021; Bareille *et al.*, 2017), gender balance (Kharel *et al.*, 2020), and social capital formation (Dhakal, 2022). Their empirical results ascertain that social interaction in cooperative induces a cohesive situation in the community, which, in turn, increases trust and social harmony. It serves to bond the various ethnic and classes of people in spite of their socioeconomic status. Likewise, after the earthquake, cooperatives had a notable change in rural areas, rebuilding homes and restoring the livelihood of low-income families in Nepal (Ona and Mukhia, 2020).

The women members feel empowered by cooperative activities (Serra and Davidson, 2020; Acharya *et al.*, 2021; Dohmworth and Hanisch, 2019). Authors describe their services facilitate maintaining the social relationship, reducing gender disparity, and engaging them in social programs. For instance, Sharma and Shahi (2022), highlight that women are empowered to perform economic activities and participate in social programs, but, the barrier to entering into marketing activities still persists. Dhakal (2018) advise the women to enter into the cooperative. It may provide the space to involve them in key positions, so,



that women can involve in the decision-making process. This is amplified by the fact that agricultural co-operatives are concerned more with household welfare (Ma *et al.*, 2018).

Cooperative creates the enabling environment to run farming (Vaidya *et al.*, 2017; Wossen *et al.*, 2017; Kopp and Mishra, 2022). They discuss the inputs, credit, information, training, and technology are the major services provided by cooperatives. A study in Nepal by Van Koppen *et al.* (2022), report that services like detail crop calendars, linkage members to government agencies, and advocacy are the major amenities delivered by agriculture cooperatives. They have other multiple roles for their members for instance: fair payment, and communal bonding (O'Brien and Cook, 2016). Women empowerment, social capital formation, and rural market linkages are the central benefits of cooperatives.

Sometimes, they face constraints related to good governance mechanisms for instance lack of coordination between government and cooperatives. A participatory action research project in Eastern India and Nepal observed that collective action has some negative aspects in terms of power relations, gender inequalities, and conflict arising from labor sharing (Sugden *et al.*, 2021). Some do activities based on the vested interest of certain elite members. Despite many positive roles, cooperatives, often, face constraints to develop further.

Challenges Faced by Cooperatives

The overall aim of cooperative is to work for the welfare of members based on standard values and principles. Nevertheless, cooperatives in Nepal are unable to meet the expectation. Agriculture cooperatives are likely to offer a range of services to farmers, but questions have been raised about the technical competencies of the board members and staffs (Suvedi *et al.*, 2017; Choudhary *et al.*, 2020; Risal, 2020; Paudel, 2022). They find that cooperatives lack managerial skills, as they are not able to offer better services to members due to a lack of commitment and unable to follow the basic principles. They argue that limited delivery of capacity-building activities and inadequate marketing facilities are responsible for this.

Afterward, the prevalence of the smallholders' market is dominated by traders and middlemen (Kopp and Sexton, 2021). Even, many agriculture cooperatives focus on saving and credit, but are less concerned in economic activities of farmers and farm upgrading. A study conducted by Dhakal (2022) report that cooperatives in Nepal, and is less likely to offer better marketing facilities. They find it difficult to manage due to lack of managerial skills.

Shifting to farmer-cooperative-oriented extension systems is questionable due to the limited technical and financial capacity (Krupnik *et al.*, 2021; Paudel, 2018; Mhembwe,

and Dube, 2017; Shrestha, 2018). They report the lack of regular inspection, lack of transparency and inadequate capital negatively affect the cooperative societies. So, policy experts argue that the execution of these policies and programs has remained weak, as the resources and institutional capacity needed for their delivery are limited. Bagchi and Gautam (2019) recommend establishing an appropriate agency to supervise these local institutions.

In addition, the unbalanced situation between the investment and credit patterns is a prominent problem for Nepalese cooperatives (Sharma, 2020). A similar result was affirmed by Maharjan (2016) while doing a case study on Kirtipur Multipurpose cooperative limited. The author has concerned about the overflow of credit as compared to investment. It may lead to the problem of discontinuity and conflict between the members of the cooperatives. In general, cooperatives, especially in Nepal, are registered without a feasibility study of human resources and their skills, market competencies, and basic facilities. They are aware of the fundamental principles of cooperatives but those are not followed properly. The success of a cooperative depends greatly on its ability to operate with clear operational standards, rules, regulations, and democratic procedures.

Summary and Conclusions

The purpose of this review paper is to examine the role of agriculture cooperatives in the case of smallholder farmers of Nepal and other developing nations. This paper mainly aimed to assess how cooperatives provide benefits for farms from sustainability perspectives in three dimensions namely: economic, social, and environmental. It delivers analytical insights about the status of agriculture cooperatives in Nepal, determinants factors, the role of cooperatives, and challenges faced by cooperatives.

The findings reveal that cooperatives provide a number of benefits for the welfare of smallholders. Firstly, the empirical results present the higher yield and higher price received by members than non-members, eventually, increasing the farm income and economic performance of the farm. The services like access to credit, farm inputs, information, training, and technology are provided by cooperatives. Equally, farmers can upgrade their bargaining power because of collective sales. Secondly, the impact of cooperatives is to protect the environment through delivering the services of organic farming, sustainable land management, and climate-resilient practices. It finally leads to mitigate the climate change impact and enhances the adaptive capacity of smallholders. Thirdly, social roles include the small-scale farmers' produce together. Cooperative enables them to link with market and advisory services, however, some researchers agree on the negative aspects of agriculture cooperatives are the lack of quality and efficiency. Even with such positive roles, they face



challenges in technical competencies, limited capacity in management, and financial part. An inadequate marketing facility by the state is another challenge to entering the national and international market. The implementation of rules and regulations seems to be ineffective, like this, principles of cooperatives are not applied properly.

In this context, the paper identified some gaps after the review of all relevant literature. Most of the studies focused on the role of saving and credit cooperatives and related to financial activities. There have been few academic attempts to link the farmers and agriculture cooperatives, which are engaged purely in agriculture activities. The empirical research necessitate seeking the interrelationship between smallholders and cooperatives. This review finds the specific data on farm well-being are generally insufficient.

Therefore, the policy and program should be targeted for farmers to address the major constraints in production. It is possible by enhancing their participation in collective action. Support needs to be targeted to smallholders by providing business skills and technology transfer. Along with this, enabling environment for cooperatives through building strategic partnerships with the private and public sectors is important. Equally, private actors need to be motivated with the provision of marketing facilities.

Conflict of Interest

The author declares that there is no conflict of interest with this publication

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