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Contents

ECONOMIC SUSTAINABILITY OF RURAL COOPERATIVES IN NEPAL - A BIO-ECONOMY APPROACH CASE STUDY OF TULSIPUR SUB-METROPOLITAN CITY, DANG

Pandey, G.

Abstract

Cooperatives today are facing difficulties resulting from the disruption of the cooperative system and the global economic crisis. Instead of a vibrant cooperative sector, cooperatives in Nepal are facing increasing financial difficulties that threaten their survival as businesses. Therefore, a study was conducted in the sub-metropolitan town of Tulsipur in Dang district of Nepal to explore practical economic models and types of cooperatives, to use the concept of bio-economy as a great opportunity for rural development, and to find a way to mitigate these negative impacts to restore the sustainable functioning of rural cooperatives in Nepal. Twenty-one agricultural cooperatives were studied through key informant interviews, focus group discussions and semi-structured questionnaires using an interview schedule. Various parameters such as investment, net income, size, liquid assets, interest income, interest expenses and other financial characteristics were used to examine economic sustainability in relation to market linkages and membership strategy. The study broadens the understanding of the existing crisis of cooperatives and the economic sustainability of cooperatives as well as the search for options for their existence. The study also provides an avenue to explore the economic opportunities of agricultural cooperatives in Nepal. Identification of successful bio-economic practices, potential bottlenecks, cooperatives, facilitation of policy dialogues to explore new economic dynamics and enable improved governance and prosperity of local communities are highly recommended for the economic sustainability of agricultural cooperatives.

Keywords: Agriculture Co-operative, Bio-economic model, Economic analysis, economic sustainability.

JEL classification: P13, J54, Q13

1. Background of study

The agricultural sector in Nepal has been significantly affected by the changes brought about by globalisation and climate change, affecting its sustainability and competitiveness. It is worth noting that agriculture plays a role in the livelihood of 90% of Nepal's population. However, the country has been experiencing a food deficit for the past 26 years. To address this challenge, it is imperative that farmers come together as a group and take steps to improve their livelihoods and agricultural practices (Poudel, 2007). Rural businesses face challenges including the impact of global market fluctuations on food production and profitability. They also have to deal with periods of floods and droughts that negatively affect their productivity (Thapa et al., 2019). Over the past two and a half decades, Nepal's agricultural sector has struggled due to factors such as limited access to technology, inputs and credit facilities, as well as the emerging challenge of climate change. A major constraint faced by farmers is the lack of marketing opportunities. Cooperatives play a role in filling these gaps where individual entrepreneurs find it unprofitable to provide services or where farmers are unfairly exploited. In addition, limited access to credit is an obstacle to the commercialisation of the agricultural sector.

Cooperatives can minimise transaction costs, reduce the risk of default and act as financial intermediaries for smallholder farmers. However, they face a fundamental challenge in enhancing their economic viability and institutional sustainability (Singh, 2022). Therefore, it is crucial to find the way to mitigate these negative impacts to restore the sustainable functioning of rural cooperatives in Nepal. The study is entirely focused on the viability of economic sustainability of agricultural based cooperatives in Tulsipur Sub-metropolitan city, Dang. Various development activities in agriculture, small industries marketing and processing, distribution and supply are now being carried out through cooperatives e.g. dairy, on-farm and off-farm agriculture cooperatives in Tulsipur Sub-metropolitan city, Dang district of Nepal. Tulsipur Sub-metropolitan city comprises 166 cooperatives with a total of 12,851 (male: 7319 and female: 5532) members and has provided direct employment to 68 persons (Department of Survey, 2077). In fact, the agricultural cooperatives play multifunctional roles in both rural and urban areas, dealing with agricultural and non-agricultural services and credit/finance. Various development activities in agriculture, irrigation, transport, small-scale industries, marketing, processing, distribution and supply through cooperatives have huge contributions to social transformation, especially for small

landholding farmers who lack resources and have difficulties in competing with other companies and larger business cooperation. In the face of global competition, a cooperative becomes the most appropriate strategies to respond to the small farmers and producers add value to agricultural commodities and increase the competitiveness of farmers. Therefore, this study delves into the practical modalities of cooperatives and characterizes them based on their objectives, proposed outcomes, and intended outputs.

The Government of Nepal (GoN) recognizes cooperatives as one of the three pillars, along with the public and private sectors, for the development of the national economy (NEFSCUN, 2020). Cooperatives are a major focus for agricultural commercialisation, increased food production, and enhanced socio-economic development. They are the most appropriate response to the commercialisation of agriculture, especially in small landholder situations, and are based on self-help strategies (Poudel, 2007). Although agriculture cooperatives are typically classified as marketing, farm supply, and agriculture-related service cooperatives in most of the available literature (Poudel, 2007; Simkhada, 2017; Valentinov, 2007; Valentinov, 2005), various types of farmer cooperatives can be categorized, such as Marketing Cooperatives (dairy, fruit and vegetables, poultry, and livestock) and Farm Supply Cooperatives. supply of farm inputs such as farm machinery, equipment, fertilizers, housing materials, livestock feed, seed, and petroleum products), Service Cooperatives (e.g. credit services, telephone/electric service, insurance services, irrigation services, trucking, ginger drying, rice drying), Production Cooperatives (milk, fruits and vegetables, poultry), Processing Cooperatives (processing agricultural commodities such as fruits, vegetables, flowers, etc.), Environmental Cooperative and Tourism Cooperatives (a means of promoting rural tourism, agri-tourism or eco-tourism). The number of agricultural cooperatives is increasing. These cooperatives are run democratically with the involvement of small farmers. The aim is to increase agricultural production, enhance farmers' capacity, promote agriculture sustainability, and achieve food self-sufficiency.

Despite the extension of the scope of cooperatives and the stimulation of economic growth, Nepal still faces major national problems such as widespread poverty, subsistence farming, land fragmentation, inappropriate government policies, low agricultural input and productivity, political instability, resource degradation, and a serious food deficit (Poudel, 2007). The shortage of skilled workers and workforce in agriculture is a critical issue in Nepal. This is due to migration,

traditional agricultural practices, inadequate rural infrastructure, and low income from agriculture. Major challenges faced by agricultural cooperatives include leadership, decision-making processes, and communication systems among members. The sustainability and competitiveness of Nepal's agriculture have been negatively impacted by global economic globalization and climate change. Rural enterprises are primarily affected by the impact of the global food market and unpredictable periods of floods and droughts, which have a negative influence on their production and profitability. Therefore, it is crucial to find ways to mitigate these negative impacts to restore the sustainable functioning of rural cooperatives in Nepal. Therefore, this study will concentrate on the challenges and opportunities faced by agricultural cooperatives to promote rural development and adapt to climate and economic changes. Additionally, it will explore mitigation strategies to ensure the sustainable functioning of rural cooperatives in the long term.

The bio-economy (BE) presents a significant opportunity for former agricultural and local communities, as well as their food-producing cooperatives, to shift their focus towards local resource potential and develop a thriving circular bio-based economy. This transition offers a chance to create new jobs and improve the economic competitiveness of cooperatives, compared to their former traditional focus on mainly agricultural production. The bio-economy is a new model of development that could serve as an additional way to develop rural areas, rather than just replacing the traditional agricultural model. This study examines how changes in cooperatives' internal structures, bio-economy approaches, and policy environment can best promote the development potential of cooperatives. The political discourse surrounding the emphasis on technological solutions and economic efficiency principles, such as the development of new materials and products to increase competitiveness, raises questions about the lack of attention given to environmental factors, such as biodiversity and ecosystem services, as well as social aspects like justice, equality, and benefit sharing. To achieve a balance between the three pillars of sustainability - social, economic, and environmental - a holistic approach to governing the bio-economy is essential. Small and fragmented agricultural markets are suggested to be conducive to the development of agricultural cooperatives. These cooperatives not only correct market failures but also perform social and farmer-specific economic roles (Bonus, 1986; V. Valentinov, 2007; V. Valentinov & Curtiss, 2005). However, the reality of Nepal's agricultural and cooperative sectors presents a different scenario. Cooperatives in Nepal are often located at the outskirts of

developments in the agricultural market and at the margins of development agendas, rather than being a vibrant cooperative sector.

Cooperatives in Nepal could use the concept of bio-economy models to manage common goods and their supply chain. This involves identifying the actors that play a pivotal role in marketing, complying with globalization, and using the latest updated technologies and various tools and instruments to better understand the mechanism of product diversification. This study argues that agricultural cooperatives and the concept of bioeconomy can drive rural development. Cooperatives should align with the institutional environment and respond positively to its signals by internalizing their cooperative identity in both governance structures and dealings with non-members.

2. Literature Review

2.1 Cooperatives and its role in rural development.

A cooperative is a voluntary association of people, typically community-based, that operates as a member-owned, managed, and controlled organization. The concept involves working together for a jointly owned business unit with the principle of 'one for all and all for one'. In its 1995 Statement on Cooperative Identity, the International Cooperative Alliance (ICA) defined a set of principles and values of cooperation, providing a comprehensive definition of a cooperative. A cooperative is a self-governing association of individuals who have voluntarily joined together to achieve common economic, social, and cultural goals through a jointly owned and democratically controlled enterprise (ICA, 1995). The International Cooperative Alliance (ICA) upholds seven principles of cooperation that shape its perspective on cooperatives. These principles include voluntary and open membership, democratic member control, member economic participation, autonomy and independence, education, training and information, cooperation among cooperatives, and concern for the community (ICA, 2018). The importance of these characteristics varies, and they are not mandatory. Instead, they provide a general framework for creating legislative and policy structures that promote cooperation.

Cooperative arrangements are based on the powerful idea that a group of people can achieve goals that individuals alone could not achieve (Dogarawa, 2012). Cooperatives are believed to be powerful development mechanisms that, under the right conditions, can lift entire groups of people

out of poverty and empower them to remain out of it (Birchall, 2003). Although there are many ways of doing business, there are only a few ways of owning and controlling business organizations (Birchall, 2003). Cooperatives are associations of individuals who voluntarily cooperate for their mutual, social, economic, and cultural benefit. They are owned and managed by their members, who can be users, employees, or residents. Cooperatives are particularly important in business processes where knowledge and trust among partners are significant factors (Centner, 1988). According to Hong and Sporleder's (2013) study, the presence of social capital in cooperatives is crucial for their basic functioning and can also improve productivity. Sabatini et al. (2014) conducted a study which demonstrates that cooperatives have a stronger tendency to foster social capital ties than other organizational forms in the market. This ability enhances market exchanges through better contract enforcement and lower transaction costs. Agricultural cooperatives help individual farmers resist market pressures from their up- and downstream partners by jointly performing activities related to processing and/or marketing of their produce (Sabatini et al., 2014; Valentinov, 2007, 2005).

To ensure a better understanding of the importance of cooperatives, it is helpful to place them within a wider socio-political context. This allows for a better appreciation of the political economy as a variable that affects the ability of cooperatives to fulfil their purpose. Cooperatives should be strengthened in several domains, including governance, financial management, business management, and community and stakeholder engagement. The success of cooperatives relies heavily on having the right people in governance and management positions (Singh, 2022). Cooperatives are unique in that they serve both economic and social purposes (Bonus, 1986), so fulfilling only the economic needs of members is not enough to achieve cooperative objectives.

The Rochdale Equitable Pioneer Society, also known as the Rochdale Pioneers, was established on December 21, 1844 in Manchester, England. This marked the beginning of the cooperative movement, which subsequently spread to other countries. In 1850, a Saving and Credit Cooperative was established in Germany, followed by similar cooperatives in the United States in 1865, Italy in 1866, and Canada in 1870. The founders of the cooperative movement, they are considered the prototype of modern cooperative societies (ICA, 2018). The history of cooperatives reflects localized reactions to the forces of industrialization, urbanization, and the rapid growth of market economies (Birchall, 1997). The cooperative movement has not only aimed to strengthen the business dimension of cooperatives but also to enhance the ability of collective action to

address social inequalities and strengthen the social fabric of societies with weak social ties. The market economy has undergone significant changes, which have exposed systemic inefficiencies that reinforce social inequalities. However, marginalized groups can mitigate these inefficiencies by pooling their productive resources and strengthening their market position (Merrett and Walzer, 2004).

Cooperatives, such as credit unions and agricultural organizations, have been successful in many Third World countries in providing economic opportunities where private and corporate capital may not see high profitability. Globally, cooperatives have become a powerful economic model and a sizeable force within some national economies. They enable economic and social security for at least 12% of the world's population. Ten percent of the world's employed population work in cooperatives, equating to 280 million people globally (Morrison, 2023). In 2012, the United Nations formally recognized and celebrated the profound importance of cooperatives and the pivotal socio-economic responsibilities they bear through the International Year of Cooperatives. Currently, there are over 3 million cooperatives with more than 1 billion cooperative members (ICA, 2018).

Chapman and Slaymaker (2002) proposed 'rural development' as a strategy to enable poor rural women and men to gain what they want and need for themselves and their children. This involves assisting the poorest among those who seek a livelihood in rural areas to demand and control more of the benefits of rural development. The approach to resolving the issue of rural development reflects the country's intention and path towards comprehensive economic development (Dutt, 2018). Cooperatives play a crucial role in the country's economy, particularly in rural communities where they fill market gaps and provide effective marketing, low-cost supplies and services, and affordable housing. Cooperatives, whether single-purpose or multipurpose, provide a wide range of services, especially to rural communities. These services include savings, loan products, insurance, and non-financial services (Simkhada, 2017). Cooperatives play a significant role in self-help and mainly serve rural areas where private businesses are hesitant to invest and public authorities do not provide basic services. Cooperatives play an instrumental role in providing direct employment and offering affordable access to energy, healthcare, potable water, improved sanitation, roads, and market access. They also give a strong voice to the lowest groups (Henry & Schimmel, 2011). Cooperatives are considered to be one of the key instruments for rural

development. However, rural development cannot be achieved without the participation of the people and institutional support.

The utilization of insurance by farmers has risen from 8% in 2014 to 23% in 2022. This increase can be attributed to the implementation of the Agricultural and Cattle Insurance Directive 2020, which mandates non-life insurance companies to allocate 5% of their insurance portfolio to agriculture and cattle insurance products in Nepal. This directive has led to an increase in the uptake of agriculture insurance. The source of this information is IFC & UNCDF (2023). Moreover, the Nepalese government has raised the subsidy on agricultural insurance premiums from 50% in 2014 to 75% in 2019. This serves as a catalyst for stimulating economic growth in rural development. As previously stated, cooperatives provide fundamental services under two categories: financial and non-financial. Therefore, cooperatives play a crucial role in rural development. Cooperatives are a means to an end, assisting in poverty alleviation through employment generation, institution building, increased income, improved health and well-being, improved education status, women's involvement and empowerment, and overall positive impacts on society. Cooperatives are structures that aid in building social capital and enhancing good governance (Simkhada, 2013, 2017).

2.2 Concept of Bioeconomy and its role in Rural co-operative

Bioeconomy (BE) is a novel concept that can be applied to the agricultural cooperative sector to revise and utilise existing economic mechanisms responsibly. It can address global societal challenges such as climate change, food and energy security, efficient use of natural resources, conservation of biodiversity, ecological stability, waste management, and water resource management (Bureš and Cudlinová, 2016). BE is defined as: The concept of bioeconomy involves the objective and value-neutral production and utilization of biological resources to provide products, processes, and services across all sectors of trade and industry within a sustainable economic system. Its aim is to provide long-term sustainable jobs, increase the attractiveness of rural areas, strengthen competitiveness and self-sufficiency, and limit the migration of young people from rural areas. Financial institutions, including cooperatives, play a proactive role in strengthening the bioeconomy module and promoting financial inclusion across the region (NRB, 2020). The connection between rural cooperatives and bioeconomy can be multifaceted, aiming to utilize resources efficiently, sustainably, and contribute to solving societal changes. For these

purposes, we need to consider the construction of infrastructure and procedural modifications to existing systems. This includes the localization and assessment of biomass resources, as well as supply chain logistics. Bioenergy offers new development potential for both existing and new sectors and regions that were previously unused or stagnant. In a broader sense, the bioeconomy explores the predictable consequences for the balance between food supply and demand, the issue of hunger and poverty, and provides a response to the pressure on natural resource stocks and biotic and abiotic stresses. The bioeconomy brings together natural resources, technologies, markets, people, and policies in a holistic approach. It supports a comprehensive and objective view of the interconnections between these elements.

2.3 Agricultural Cooperatives and its study in third sector economics.

Craig's (1993) definition of cooperatives and cooperation provides a concise view of the main features of this enterprise: 'Co-operation is the free and voluntary association of people to create an organization which they democratically control, providing themselves with goods, services and/or a livelihood rather than profiting from others, with an equitable contribution of capital and acceptance of a fair share of risks and benefits generated by the joint activity.' Organizing a cooperative to circumvent the market power of certain agents is a legitimate and justifiable action for farmers. As Sexton and Iskow (1988) pointed out, cooperatives do not replace market exchange, but rather harmonize it. Additionally, cooperatives are crucial in situations where knowledge and trust among business partners play a significant role in business processes (Centner, 1988). The productivity of cooperatives is enhanced by the presence of social capital (Hong and Sporleder, 2013). For individual farmers, a cooperative serve as a source of social capital. The notion that a firm is a form of social capital is not a novel concept (Anderson & Jack, 2002).

Cooperatives are studied as part of the social economy in the European tradition, while following the U.S. approach, they fall outside of the third sector reach (Salamon & Anheier, 1996). The American understanding of cooperative enterprises views them as functioning outside of the third sector framework due to the possibility of cooperatives redistributing some of their annual surpluses to their members. This violates the principle of non-distribution of profit (Salamon & Anheier, 1996). Gui (1991) argues that cooperatives are formed to meet the needs of their

members, rather than to maximize profits and redistribute them subsequently. Contrary to popular belief, he suggests that it is important to consider the original motivation behind the formation of cooperatives. This argument aligns with the view presented by Defourny and Nyssens (2010) that identifies two key dimensions for distinguishing third sector organizations from those in other sectors: their productive purpose and internal organizational structure. These criteria should be used to evaluate cooperatives for their third sector membership. Furthermore, in certain countries, such as Italy, legal regulations prescribe limits on profit distribution in the cooperative sector (Borzaga & Defourny, 2004; Evers & Laville, 2004).

Craig (1993) highlights an important aspect of cooperative governance arrangements: risk sharing. This is particularly important in volatile and highly risky sectors such as agriculture, where cooperatives can provide significant advantages for small farmers (Sexton & Iskow, 1988). After providing an overview of the cooperative principles commonly found in literature, Dunn (1988) highlights a crucial distinction that must be made between cooperative principles and supporting practices when defining a cooperative enterprise. He asserts that all cooperative organizations are defined by three key principles: Dunn (1988) distinguishes between the user-owner principle, the user-control principle, and the user-benefits principle, which are distinct from mere cooperative practices related to internal structure, decision-making processes, and revenue distribution. Dunn's perspective on cooperatives is valuable because it emphasises the fundamental 'ownership-control-benefits' axis that characterises cooperative enterprises. Cooperatives generate many benefits for small farmers because the owners of the enterprise are also users of its services. This guarantees the quality of services provided by the cooperative. Menard (2004) also notes that cooperatives must incur high costs related to monitoring and supervision due to their large membership and multi-stage production processes. However, some literature suggests that cooperatives, as a collective community of individual farmers, can effectively control monitoring and supervision costs through their members who perform these functions on their own farms (Valentinov, 2007).

In this context, it can be argued that the operational costs of monitoring and supervising a cooperative are more than just the sum of its parts. Supporting mechanisms that are external to cooperative functioning, as suggested by Patrie (1998), include government agencies for business development, financial institutions specifically tailored to the needs of agribusiness, and various

other management-oriented organizations aimed at assisting cooperatives in their work. All of these external mechanisms operate within the broader context of agricultural and rural development. To gain a better understanding of the implications of third sector enterprises' integration into their socio-economic context, it is necessary to supplement institutionalist insights with perspectives from the theory of third sector organizations, particularly regarding issues related to the motivation for establishing and operating such enterprises. The third sector's contribution to understanding cooperatives lies primarily in its treatment of cooperatives' purposes and specific management processes employed in all third sector enterprises, including cooperatives.

2.4 Bioeconomy as new perspective for improving Agriculture Co-operative to Rural Development

The term bio-economy was first defined by Juan Enriquez, Andrew Cabot and Rodrigo Martinez in 1997 (Enriquez et al., 1998). The life science and biotechnology sectors are interested in the business opportunities presented by bio-enabled futures. Currently, the bio-economy is expanding into various branches and sectors of the economy and can be compared to the information and technological revolution (ITC) or revolution 4.0 (von Braun, 2013). Bio-economy can be viewed as a longstanding practice in societies, such as food production through bakeries or breweries. The broad range of political definitions reflects the lack of a precise scientific definition of bio-economy in the research field. The text appears to already meet the desired characteristics. No changes have been made. In theory, the bioeconomy could involve citizens, the service sector, and various economic sectors that produce, manage, and utilize resources, such as agriculture, horticulture, fisheries, forestry, landscape, bioenergy, and bio-refineries (Lewandowski, 2015; Lopes, 2015). The term 'bio-based economy' typically refers to the use of natural and renewable biological resources as raw materials, while 'bio-economy' is often used to describe biotechnology, life sciences, and related technologies (Staffas et al., 2013). The bio-economy offers advantages beyond those of the green economy by utilising not only renewable resources but also biological resources, including biomass from fields, forests, and oceans. This new mode of production has the potential to benefit marginalised, less developed rural regions with dispersed populations (Lehtonen & Okkonen, 2016).

A bio-economy is suitable for peripheral areas because industries entering new regions tend to relate to pre-existing industries. However, new production activities such as bio-economy could

attract new investors without any relationship to former businesses. Bio-economy practices enable these areas to produce more of their own energy sources than they can consume. From this perspective, rural regions benefit (Brown, 2003). The circular nature of the local economy is a significant advantage, as most of the energy produced will not need to be transported in and out. This will result in cost savings for both energy and transportation in rural areas (Johnson & Altman, 2014). The implementation of the bioeconomy to tackle climate change requires an adaptive and interactive administration that involves citizens in the social world. This is particularly important given the technological revolution (Heiskanen et al., 2014) that allows for changes in production and creation. In such cases, agriculture co-operatives and rural enterprises can establish small-scale bio-based enterprises using biomass-based materials, which can support rural prosperity in the long run. This study examines how agricultural cooperatives are scaling up the application of bio-economy for sustainable use and support of rural development. In practical terms, the concept of BE can transform agricultural cooperatives into a tool for rural development, addressing the aspirations of cooperative members and providing solutions to societal challenges. This can be achieved through modifications to the existing economic system of cooperatives, using established economic mechanisms.3. Methods

3.1 Analytical framework

The framework primarily focuses on agricultural sustainability and the role of rural farmers through cooperatives in the application of bioeconomy under climate change. It emphasises the importance of using local resources and combining them with local knowledge for sustainability, which enables feedback between the economy, environment, and local community. Farmers play a crucial role as representatives of local knowledge (Schmid et al., 2012). Von Braun (2013) noted the absence of effective land-use planning for biomass production that does not involve smallholder farmers. Rural regions are fundamental to the bio-economy as they are natural producers of biomass resources. Figure 1 illustrates the dynamic relationships between the informal institutional environment (past regime's values) (1), the formal institutional environment relevant to agriculture and cooperatives (2), the internal characteristics of agricultural cooperatives (3), and the role of bioeconomy approaches in rural development (4), as defined in the legislative framework for the agricultural and cooperative sectors. The non-profit and social economy approaches differ mainly in their goals, organizational control, and earnings distribution (Defourny

and Nessens, 2010). However, both types of enterprises are shaped by local needs and circumstances and evolve in response to them. The social and development aspects of these enterprises are highlighted by their embeddedness in the local context, distinguishing them from public or private enterprises. This aspect is not fully considered in neoclassical or institutional perspectives. The analytical framework for this research is based on Williamson's (2000) work on analysing institutions at different levels, including their mutual interaction. This framework draws heavily from the work of North (1990) and Williamson (2000). In a broader sense, it corresponds to Williamson's classification of institutions into 'institutional environment' and 'institutional arrangements'. The 'institutional environment' refers to the broader social, political, and economic context in which institutions operate, while 'institutional arrangements' refer to the specific rules and norms that govern the behaviour of actors within institutions.

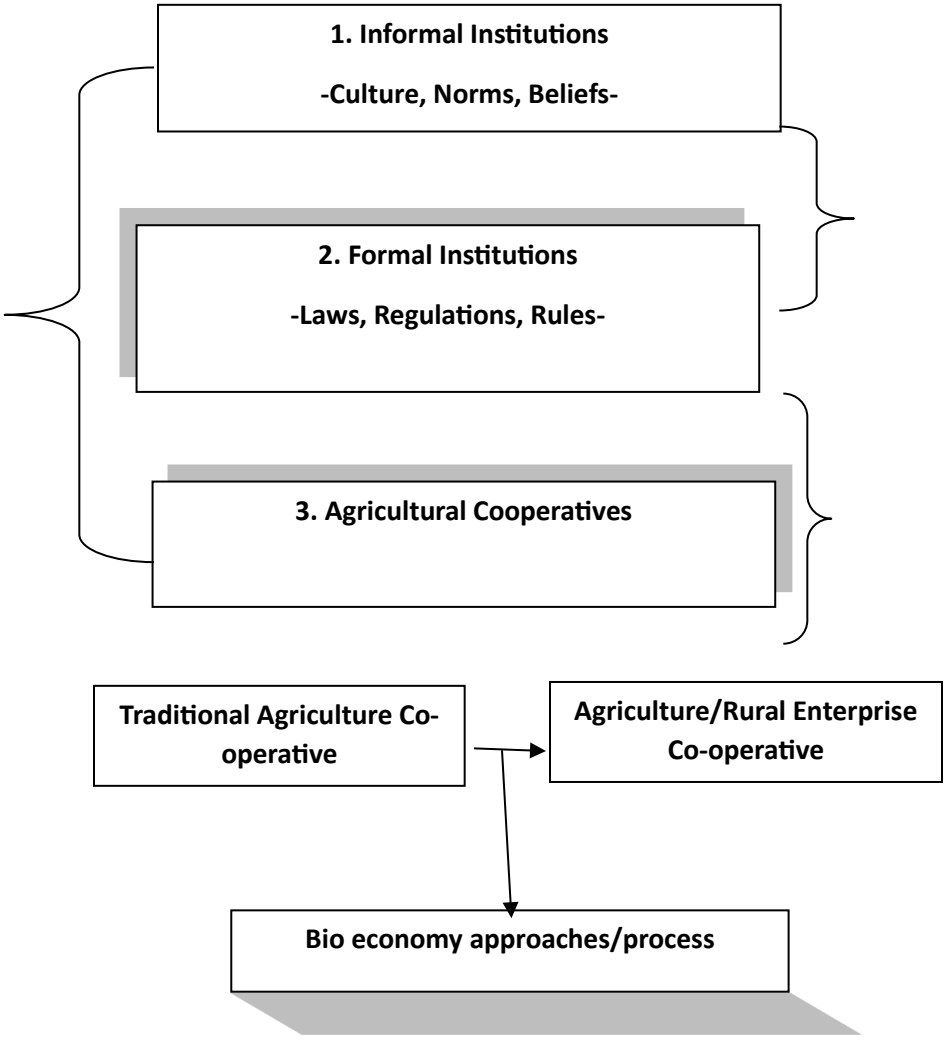


Figure 1: Analytical framework of the research (modified of Nunhanovic-Ribic, 2015, according to Williamson, 2000))

This working paper is based on three essential concept blocks or levels and their mutual dynamics: presently existing formal institutions (2), agricultural cooperatives, bioeconomy process/approaches (3), and rural development (4). The impact of the informal institutional environment on the formal institutional environment in the case of Nepal will not be measured but will be explored, as it is recognized that the informal institutional environment is a challenging research subject and well beyond the scope and focus of this research. In other words, the analysis that will explain the channels through which the past values encroach upon the meaning and functioning of cooperatives today will rely on secondary data sources. Level two (2) of the analytical framework pertains to the formal institutional environment. This includes the collection of laws, bylaws, regulations, and rules that establish the framework for the market as a whole. These regulations define the behavior and status of actors in the agricultural market of Nepal. The ultimate goal of these regulations is to foster a better quality of rural life through bio-economic approaches towards rural development. For this paper, we will evaluate the role of the formal institutional environment based on its capacity to:

- Identify the basic role of institutions in the proper functioning of the agricultural market, with specific reference to the cooperative sector, as well as the obstacles and opportunities for rural development.
- To enhance market functionality in the agricultural and cooperative sectors, specific policy instruments and measures should be created. This can be achieved through the forward-looking role of agriculture-based bioeconomy approaches.

The study will explore practical economic models and types of cooperatives that exist in the agricultural sector of Nepal, along with their basic organizational characteristics. The institutional analysis will also refer to the policy instruments that aid in enhancing the cooperative sector in general, as well as cooperativeness and its performance in enhancing economic prosperity under

climate change. In other words, this study aims to investigate the role of cooperativeness in economic decision-making and its potential positive impact on the effective use of resources.

The above analytical framework does not illustrate a direct linkage between the formal institutional environment and rural development. However, it recognises that the development of rural areas should be the final goal of laws and policies that promote bio-economy concepts and regulate the agricultural sector. The analytical framework identifies two general types of cooperatives: traditional and contemporary cooperatives. There are numerous variations under each of these two categories, which will be explored in detail in this study. The line connecting the informal institutional structure and agricultural cooperatives in Figure 1 indicates an indirect relationship between the two. The present research will focus on the relationship between levels (2), (3), and (4) in the analytical framework.

3.2 Research methodology

Cooperative performance is a complex concept that can be difficult to comprehend and measure. Due to the combination of economic objectives pursued through cooperative organization and its associational character, research on cooperative performance often faces the dilemma of determining which aspect is more important, or if they can be measured separately at all. Although profit is a measure of success for for-profit firms, it is just one aspect of cooperative enterprise and not always the most important. It is important to consider other factors such as financial stability. This statement aims to highlight the fact that cooperative enterprises have a broader range of goals than just financial gain. Empirical studies on cooperative economic performance can be classified into two categories: those that rely on financial ratios and those that measure economic efficiency. Cooperatives are of particular interest to researchers (Sexton and Isakow, 1988; Soboh et al., 2009).

Regarding the use of financial ratios, Soboh et al. (2009) argue that while they can indicate a company's overall performance in terms of profitability, liquidity, solvency, and efficiency, they do not have a clear link to economic theory and should be used with caution. In summary, financial ratios are used to compare different aspects of a cooperative's performance relative to each other. Due to the challenges involved in defining and measuring cooperative success, researchers have simplified the concept by categorising cooperatives as either vertically integrated firms, independent firms, or coalitions of firms (Soboh et al., 2009, 2012).If a cooperative is viewed as a

single-objective firm, either through vertical integration of firms or as an independent firm, its performance is typically measured using various financial ratios derived from the cooperative's balance sheets (Soboh et al., 2009). This strand of literature suggests that the financial success of a cooperative is dependent on a multi-layered, cooperative-specific structure that benefits its members. This structure involves reducing input prices for members and seeking the best market price for their produce. Additionally, at the end of the year, patronage refunds are distributed to cooperative members. Therefore, the success of a cooperative can be attributed to the success of its members.

Sexton and Isakow (1993) suggest that cooperative performance should be evaluated based on farmers' well-being, regardless of whether they are cooperative members or not. They propose two reference points for this evaluation: the well-being of farmers before the cooperative was formed and the well-being of farmers who are not cooperative members. Sexton and Isakow also highlight the significant impact of cooperatives on the market behavior of other actors, known as the 'cooperative yardstick'. Other market actors may respond to the presence of cooperatives by adjusting their pricing policies, offering higher prices for products or lower prices for production inputs. This effect of cooperatives is crucial but rarely measured.

Some authors assume a hierarchy of objectives pursued through cooperatives. For instance, Karami and Moghaddam (2005) studied the performance of 52 agricultural production cooperatives, comprising 260 cooperative members, using a theoretical model in which a separate set of determinants affects the success of each specific stage in the production process. The study concluded that cooperative performance is influenced by various factors. Social factors were found to affect the pre-cultivation stage, while natural factors were found to impact the stage of cultivation. This is evident regardless of the methodology or aspect of cooperative enterprise studied. One key finding from numerous studies on cooperative performance is that it is difficult to make generalisations due to the complexity of the organisational construct. Secondly, when assessing the overall success of a cooperative enterprise, it is crucial not to overlook its interaction with wider institutional structures and the environment. In his analysis of Philips' 1953 article on the 'Economic nature of cooperative associations', Staatz (1994) summarizes several important research questions found in the literature on cooperative performance. These questions help to unravel the performance dilemma and confirm the previous two points.

3.3 Methodological procedure

1. Literary sources on the development of the agricultural situation in Nepal up to the present day are discussed, with comments on state policy, agricultural competitiveness, production specialisation, and the main problems that could be addressed through a revised production strategy.

2. The proposed criteria for selecting traditional and contemporary cooperatives will be used to select five cooperatives from each group in the Tulsipur municipality. Additionally, five private enterprises will be selected as a control sample for comparison with the cooperatives.

3. In each cooperative and enterprise, the cooperativeness, governance system including planning, decision-making process and market functionality, employment opportunity, attitudes of leaders of village community, landowner and farmers, and use of technology were examined. The questionnaire survey, key informants' interview and focus group discussions (FGDs) was carried out to collect primary data with detailed information on organisational structure, financial performance and decision-making processes.

4.Statistical software such as EXCEL, SPSS, or R will be used to analyze primary data. The analysis will include regression and correlation analysis, ANOVA, or CHI square, and other statistical methods.

5.The performance analysis will evaluate the comparison between traditional and contemporary agricultural cooperatives and private rural enterprises..

The data entry phase for the core information on financial viability and organizational characteristics of cooperative enterprises will be completed in February 2024. Relevant literary sources will be identified to provide a strong theoretical background and context. The issues of agriculture co-operatives, bio-economy, climate change, and market competitiveness in Nepal will be described in general. From February to March 2024, additional information will be collected, in particular on power structures in cooperatives and the presence of social property in cooperative enterprises. To gather this information, we will contact all sample cooperative leaders who originally supplied information according to the checklist. We will personally visit and interview at least 15 cooperatives, including traditional and contemporary cooperatives and private rural enterprises. The study will refer to cooperation as a formal institution and define its role, behavior,

and the status of stakeholders in the agricultural market of Nepal. It aims to foster a better quality of rural life through bioeconomic approaches towards rural development.

3.4 Data description and data limitation

The selection of research methodology is frequently influenced by the type and quality of available data. Nepal, as a developing and transitioning country, is a prime example of an information-poor environment where official data on relevant economic and social factors is either of low quality or entirely absent. This research is exploratory and explanatory due to a lack of information on the agricultural sector and deficiencies in publicly available data. Data will primarily be gathered between February and March 2024. Multiple sources will be used to gather data for this study. This section presents a summary of the data sources used in this working paper. The financial and organizational information of 21 agricultural cooperatives will be obtained from these sources. Gathering empirical analysis data will be the most challenging task as it is derived from three different sources: the Cooperative Association of Nepal database, agencies for intermediary information and financial services, and the Agricultural Project database of cooperatives.

3.5 Cooperative association of Nepal database

As membership of cooperatives in Cooperative association is not mandatory, it is possible that some cooperatives may not be reported in government databases. The database system will contain information on the year of establishment, number of members, number of cooperative members and employees, information on cooperative property (distinguishing between owners and users), cooperative activities, date of last audit, and kinds of subsidies/supports received by the cooperative (from the government, donors, etc.). The primary data was collected through focus group discussions with cooperative personnel, enterprise members, and cooperative members. The interview was conducted with the chairperson, vice chairperson, secretary, member accountant, office secretary, auditor, and other relevant key stakeholders. The meeting minutes and legal documents of each cooperative enterprise will be collected and analysed.

Agencies for intermediary, information and financial services

Every active business entity in Nepal is legally required to submit a financial report to entity level agencies. These reports represent the only official and reliable source of financial data on cooperative performance. The data within the authorities' reports will be organised based on the

information provided in balance sheets. It will consist of equity, liabilities, long and short-term debts, capital, average salaries, total turnover, total expenses, profit before taxes, taxes, earnings from exports, reserves, the number of employees, property and its value, land, long and short-term loans, and undistributed profits.

3.6 Agricultural project database of cooperatives

Several donor agencies are implementing a project aimed at fostering market activities in agriculture. They will systematically collect data on agricultural cooperatives in Nepal, particularly in the Dang Valley study sites.

3.7 Hypotheses and research questions

To enhance comprehension of the nature of barriers and the potential of the cooperative organizational form and bio-based economy model to promote economic sustainability, this study proposes the following research hypotheses and questions.

The research explores three general hypotheses:

1). The extent to which agricultural cooperatives enhance farmers' livelihoods depends on how well the cooperative internalises its 'cooperativeness'.

2) Additionally, the bio-based business model has the potential to create job opportunities and increase the competitiveness of rural or agricultural cooperatives compared to their current position.

3) Furthermore, regional bio-based economies can flourish, promoting open innovation approaches and facilitating knowledge exchange within and between regions.

The following research questions are formulated:

1. Do currently present policy instruments, agriculture-related documents, and the broader literature referring to the bio economy frames enable or constrain the development of cooperative enterprises?
2. What are the basic internal and external barriers to cooperatives and use of bioeconomy model being more viable instrument of rural development in Nepal?

3. How to improve a governance system to improve the cooperativeness and implication of bio-economic approach?
4. What are the differences in ability to establish bio-based economic approach between traditional and contemporary cooperatives?
5. How the cooperative performance in enhancing economic prosperity and reducing the impact of climate change could be enhanced?
6. How are cooperatives treated by law and institutions in terms of their ability to react or accommodate to global challenges?

3.7.1 Methodological Procedure

The study comprises primary and secondary data, including a survey of household/cooperative leaders, a literature review, participatory rural appraisal tools such as focus group discussions, economic performance mapping of cooperatives, and a review of relevant literature.

3.7.1 Household/cooperative survey: The household survey employed a systemic stratified sampling approach, stratified according to the active, moderate, and passive farmers of the cooperative involved in production, packaging, and marking. A total of 194 farmers/stakeholders were selected for the survey.

The questionnaires for cooperative leaders were typically completed by either the directors themselves or cooperative members who were close to the directors, in the presence of researchers for data collection. Following the compilation of data into a database, a number of cooperative directors were interviewed about the most interesting or unclear aspects of the information obtained through the questionnaire. A total of 21 interviews were conducted with cooperative leaders or directors.

Financial data was collected from the most reliable cooperative, supplemented by data from the Cooperative Association database in Tulsipur. The database contains information on 166 cooperatives, and data from 21 of these cooperatives was comprehensively analyzed to determine their activity status. The researcher conducted tele-communication, focus groups, and KII with all listed cooperatives.

3.7.2 Pre-orientation on questionnaire survey: The enumerators and researchers involved in the study were invited to attend an orientation training, which included both theoretical and field exercises, prior to the survey. The one-day theory session covered the objective of the study, the

role of agricultural cooperatives, institutional arrangements, rural development, economic performance, marketing strategies, and how to apply participatory rural appraisal tools. The enumerators and researchers pre-tested the study sites to contextualise local needs.

3.7.3 Literature review: Literary sources about the development of agricultural situation in Nepal up to now with some comments focused on state policy, competitiveness of agriculture, main specialization of production and main problems that may be solved by changed production strategy. Additionally, I validated preference measures, which is crucial for economic decisions. The appropriate recent scientific article was found using Google search engine, Scopus, and WoS to gain a better understanding of theoretical and practical knowledge in the field of cooperatives, cooperative performance, bioeconomy models, and climate change-related issues.

3.7.4 Selection of sample: The criteria for selecting traditional and contemporary cooperatives were proposed, and five cooperatives from each group were chosen. Additionally, five private enterprises were selected as a control sample for comparison with the cooperatives. The study investigated various aspects of each cooperative, including cooperativeness, governance systems (including planning and decision-making processes), market functionality, employment opportunities, attitudes of leaders in the village community, cooperative, landowners and farmers, and the use of technology. The 194-household questionnaire survey, 20 key informants' interview and 10 focus group discussions (FGDs) was done for gathering primary data with detailing information on the organizational structure, financial performance, and decision-making processes.

3.7.5. Community Teaching: During a community teaching session, executive members from the board of 21 selected cooperatives were informed about the role of cooperatives in achieving sustainable development goals and building rural resilience in terms of economic sustainability. The session included an open dialogue.

3.8. Data Analysis

The data collected from the field was highly heterogeneous. To simplify the analysis, we processed the data by editing and coding. The edited and coded data was then tabulated under the required headings and subheadings. We coded, cross-checked, and cleaned the survey questionnaires where

necessary. The data from the household survey was entered into a data-entry mask designed using the SPSS Statistics software package version 26.0. 3.9. Data Description and Data Limitation

The selection of research methodology is frequently influenced by the type and quality of available data. Nepal, as a developing and transitioning country, is a prime example of an information-poor environment where official data on relevant economic and social factors is either of low quality or entirely absent. This research is exploratory and explanatory due to a general lack of information and deficiencies in publicly available data on the agricultural sector. Data was gathered from multiple sources during 2018-2019.

The summary of data sources is presented below. Gathering data for empirical analysis in this thesis will be particularly challenging. Financial and organizational information for a sample of 21 agricultural cooperatives will be obtained from three distinct sources.

3.9. Cooperative Association of Nepal Database:

The study identified the database of agricultural cooperatives in Nepal, both active and non-active. Specifically, information was collected through case studies. The third national cooperative congress for 2023 was held on April 6-8, with a theme of 'Self-regulation and Governance for Coops Sustainability'. The congress was used to update the cooperative database for Nepal. The official websites featured the following databases and proceedings.

- 30,879- Cooperatives Registered
- 311- District level cooperative unions
- 11- Provincial level cooperative unions
- 18- Sectoral central level cooperative federation
- National Cooperative Bank

These cooperatives offered membership to 7.3 million individuals, 56% of whom are women. They also provided direct employment opportunities to 91,301 individuals.

3.9.2 Agencies for Intermediary, Information and Financial Services

Every active business entity in Nepal is legally required to submit a financial report to entity level agencies. These reports are the sole official and therefore reliable source of financial data on

cooperative performance. The data in authorities' reports is organized based on the information provided in balance sheets. It consists of equity, liabilities, long and short-term debts, capital, average salaries, total turnover, total expenses, profit before taxes, taxes, earnings from exports, reserves, number of employees, property and its value, land, long and short-term loans, and undistributed profits.

3.9.3. Agricultural project database of cooperatives

Several donor agencies are implementing a project aimed at fostering market activities in agriculture. They have systematically collected data on agricultural cooperatives in Nepal, particularly in the Dang Valley study sites.

4. Results and Discussion

A total of 21 cooperatives were selected for an in-depth overview of their economic sustainability. They were asked to provide financial audit data for the consecutive years from 2072/73 to 2074/75. The data provided included share amounts, loan deposits, liquid assets, deposit amounts, interest amounts, tax deducted amounts, and total fund allocated amounts. The data indicates a steady increase in the share amount, loan acquisition amount, and deposit amount, resulting in a significant growth in total fund transactions in the following years.

Sampling Data:

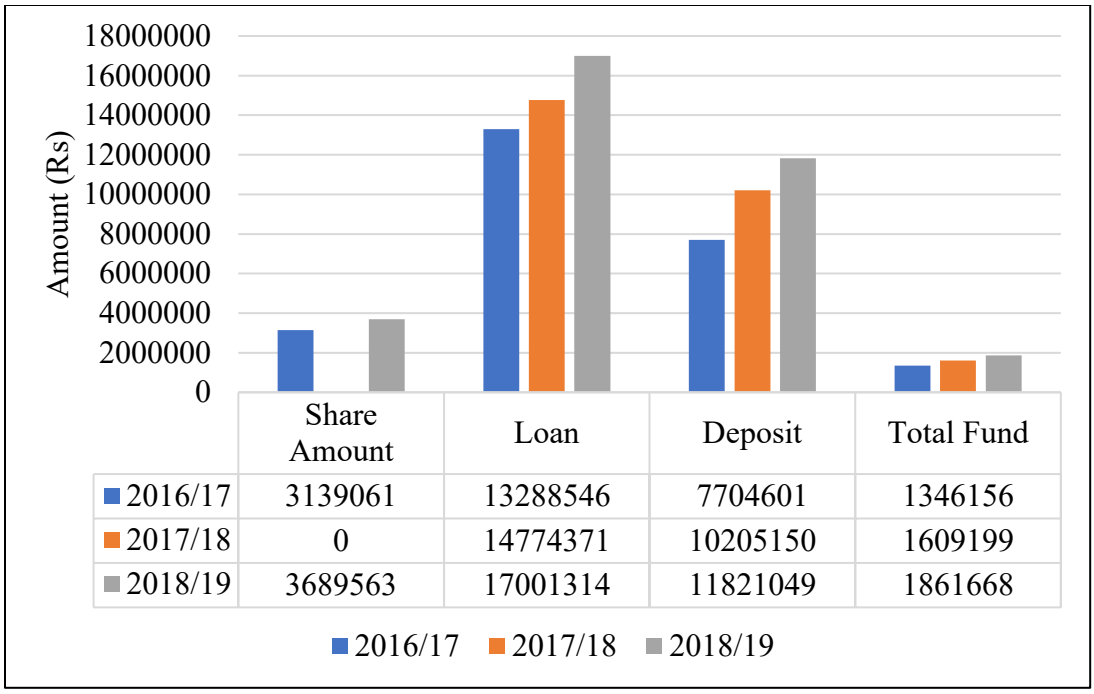
By the end of 2019, a total of 166 cooperatives were registered under the Cooperative Association of Tulsipur. We used the accounting data collected from the audit data for three consecutive years 2016 to 2018. The data were accumulated from the 8 savings and credits cooperatives (S) and 13 Multipurpose cooperatives (M) from Tulsipur Sub-metropolitan city. The sample size is 12.65% of the total samples from S and M collected.

Table 1 No of Cooperatives in Tulsipur Sub metropolitan in 2019

Types of cooperatives	Total number	Sample size
Saving and Credit (S)	72	8 (11.2%)
Multipurpose (M)	95	13 (11.6%)
Total (S+M)	166	21(12.65%)

4.1 Financial audit

The 21 cooperatives were established as business entities during their emergence in the context of economic circumstances. The total shares disbursed, loans undertaken, deposits, and funds by the end of the year are displayed below. The data clearly shows the growth of cooperatives as one of the leading transaction entities in Tulsipur.



	Share Amount	Loan	Deposit	Total Fund
2016/17	3139061	13288546	7704601	1346156
2017/18	0	14774371	10205150	1609199
2018/19	3689563	17001314	11821049	1861668

Figure 1 Financial audit database of the cooperatives

4.2 Loan

A total of 194 individuals were surveyed via questionnaire, and the loan disbursement data was divided into four categories: short-term, mid-term, long-term, and no loan acquired. The data shows that 21 individuals sought short-term loans, 41 individuals undertook mid-term loans, 8 individuals acquired long-term loans, whereas 114 individuals did not take out any loans at all. Due to the economic crisis, individuals are hesitant to take risks when it comes to acquiring loans or withdrawing from cooperatives. Respondents who sought short-term loans did so for agricultural and livestock purposes, while those seeking mid-term loans did so for business purposes. Overall, agricultural cooperatives, particularly those consisting of small farmers, maintain higher levels of income. This enables regular transactions and allows small farmers to construct decent houses, provide quality education for their children, and obtain health insurance to sustain their overall rural livelihoods.

4.3 Decision- Making

The involvement of stakeholders is crucial for the economic sustainability of cooperatives. Stakeholder meetings are used to determine the progress and growth of cooperatives. However, some respondents are missing these meetings, resulting in delays in decision-making. Decisions regarding the hiring and firing of employees are made during stakeholder meetings, although the executive committee is the majority decision-maker in the general assembly. Dispute resolution on the proper functioning and sustainability of cooperatives is conducted using either consensus or qualified majority methods in the general assembly. During each meeting and assembly, cooperative education enables participants to engage in democratic debates and exercise democratic principles, while also receiving capacity-building and leadership training. This ensures that cooperative members become enlightened citizens who are aware of the political issues affecting both the cooperative and society.

4.4 Problems in Cooperatives

i. The KII respondents and focus group discussion groups were approached with a predetermined set of semi-structured questions. They were asked to express the current scenario and problems that exist within the cooperatives of Tulsipur. Lack of clarity about mission, national vision, and adequate monitoring on the part of government with respect to cooperative movement.
ii. Lack of managerial skills, and professionalism, sound planning and implementation.
iii. Lack of working capital, appropriate research extension and education about cooperative movement.
iv. Lack of credibility.
v. Lagging behind from institutional developments.
vi. Contributions are not measured in national accounts.
vii. Dormant members.
viii. Inadequately trained human resources.
ix. Lack of strategic direction.
x. Very little or no intervention in digitization.
xi. Weak portfolio.
xii. Low risk management.

xiii. Liquidity crunch in the financial system.

4.5 Bio-economy model: A new cooperative approach to economic sustainability.

4.5.1 Conceptualization of Bio-economy Model

The participants in the capacity building workshop at KII were asked a series of questions about how the cooperatives conceptualize bioeconomy and how they are adapting to it. The responses were then analyzed to deduce the respective answers.

Table 2 Cooperatives conceptualizing bio-economy.

Conceptualizing Bio-economy	An approach to achieve financial independence by producing, conserving, and consuming natural resources.
Adaptation	By facilitating skills and capacity development training and exhibitions, adapting savings, investment, and employment approaches, understanding market management, and enabling equal access for all.
Delivery	The current policy and government structure are inadequate for implementing the bio-economy approach in cooperatives. The presence of middlemen as mediators increases the value addition by up to 5 times for the final consumer. Unscientific use of imported fertilizers has led to the displacement of pesticides, chemical fertilizers, and artificial fertilizers.

4.5.2 Barriers of Bio-economy

Cooperatives need to develop innovative initiatives to mitigate and adapt to climate change while generating steady economic and social value to improve the operational state of rural cooperatives. It is important to maintain a balanced and objective tone when discussing the evidence for climate change and its impacts. The language should be clear, concise, and free from biased or emotional language. Technical terms should be used consistently and explained when first used. The text should adhere to conventional academic structure and formatting, including clear section headings and citations. Finally, the text should be grammatically correct and free from spelling and punctuation errors. With that in mind, the scenario required a functional platform that can perform well based on the foundational principles of a bio-economy ideology, which can be generalized as the 'bio-economy model of cooperatives'. The model is based on three fundamental principles: ecological sustainability, fair labor practices, and localized value chains.

However, the local community is still unaware of the operational mechanism of the bio-economical model of cooperatives and what it stands for. The major barriers to cultivating a bio-economy model of cooperatives were identified by the respondents and prioritized.

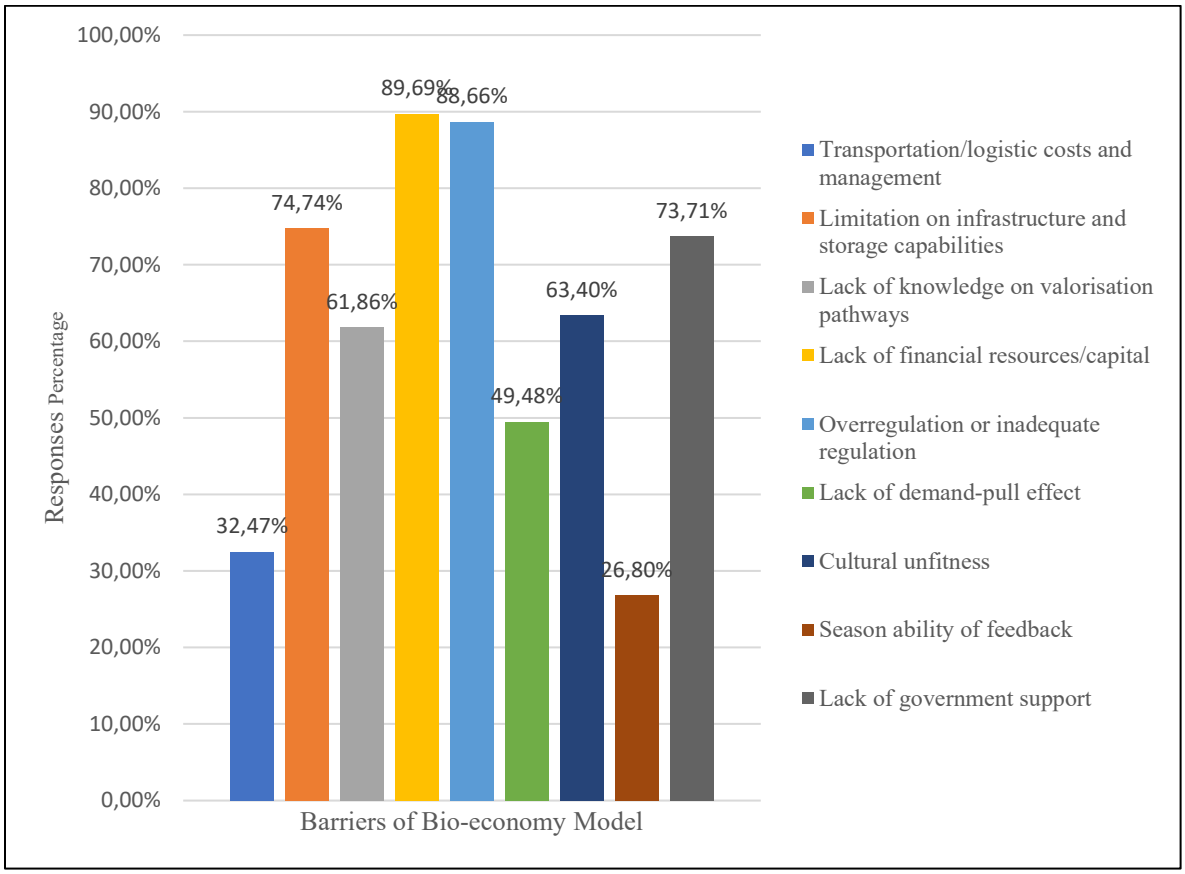


Figure 3 Causative responses to the barriers of sustaining a bio-economy model

4.5.3 Challenges

The implementation and implications of the bio-economy model, a new approach to economic sustainability, are surrounded by various hurdles and challenges. Seven key categories were identified for implementing a cooperative-based bio-economy model, ranging from simple operational challenges to geographical obstacles.

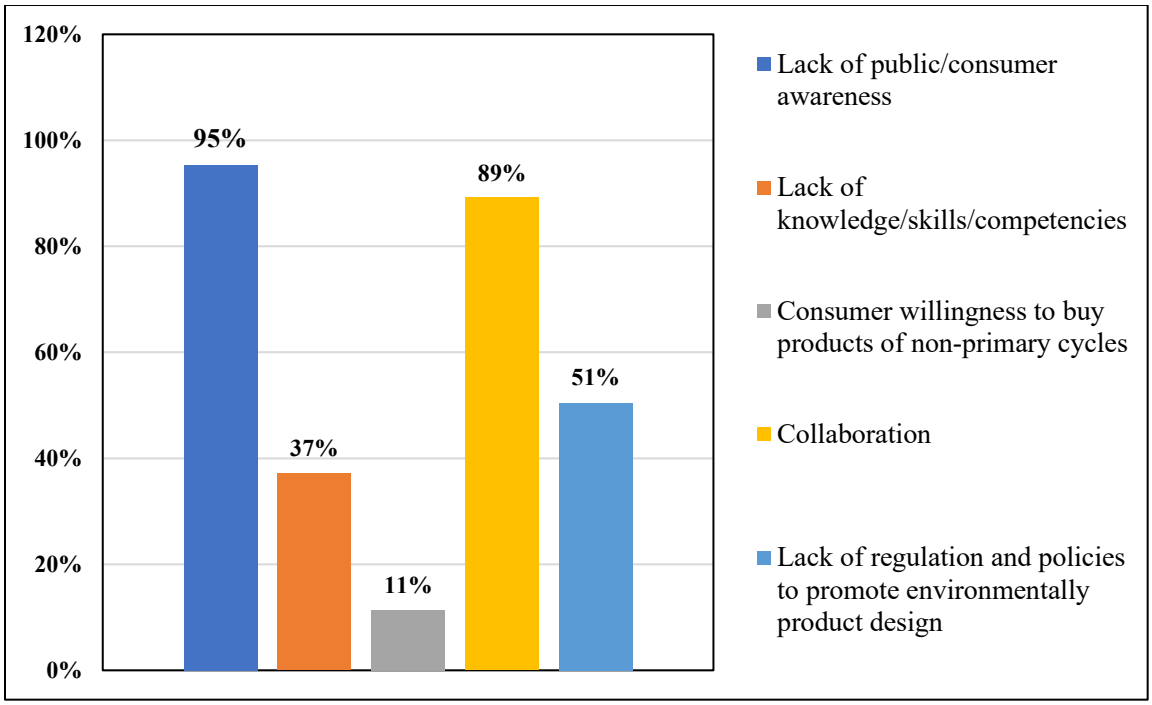


Figure 4 Lack of Concept of Bio-economy

The survey revealed significant gaps in consumer knowledge and willingness to purchase bio-economy products. Almost all respondents identified a lack of public understanding as a problem. Inadequate technical skills and poor collaboration across sectors were also identified as major obstacles, with 37% citing competency deficiencies and almost 90% citing poor collaboration.

Regarding technology, limitations were noted in scaling up innovations and dealing with intellectual property rights. Additionally, respondents expressed concerns about subpar infrastructure, limited access to financing, over-reliance on subsidies, and inadequate economies of scale.

Production challenges arise due to inconsistent availability, variable qualities, and seasonal fluctuations in raw materials. Another recurring concern is competitiveness with conventional products, including pricing, customer confidence, and market demand.

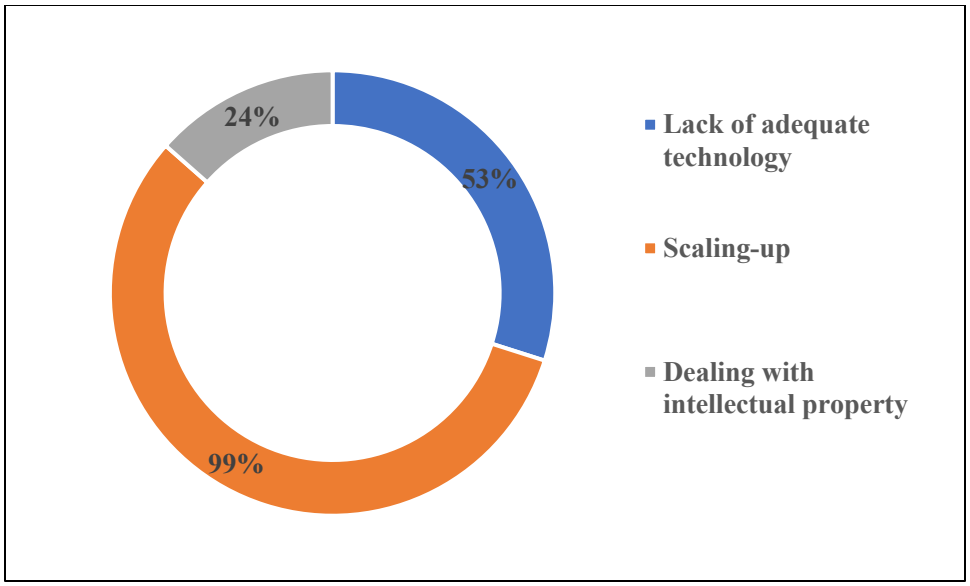


Figure 5 Technological Challenges of Bio-economy

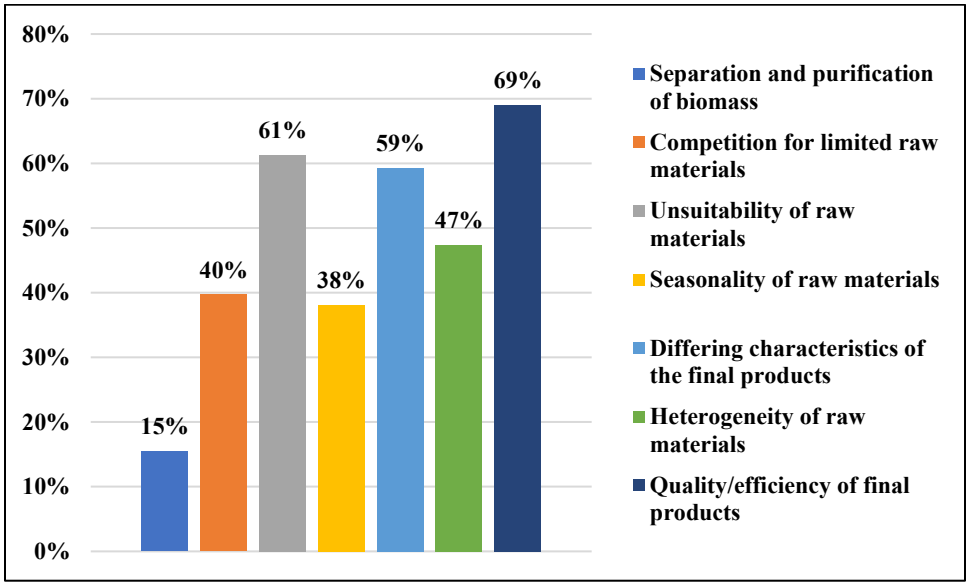


Figure 6. Bioeconomy product availability challenges

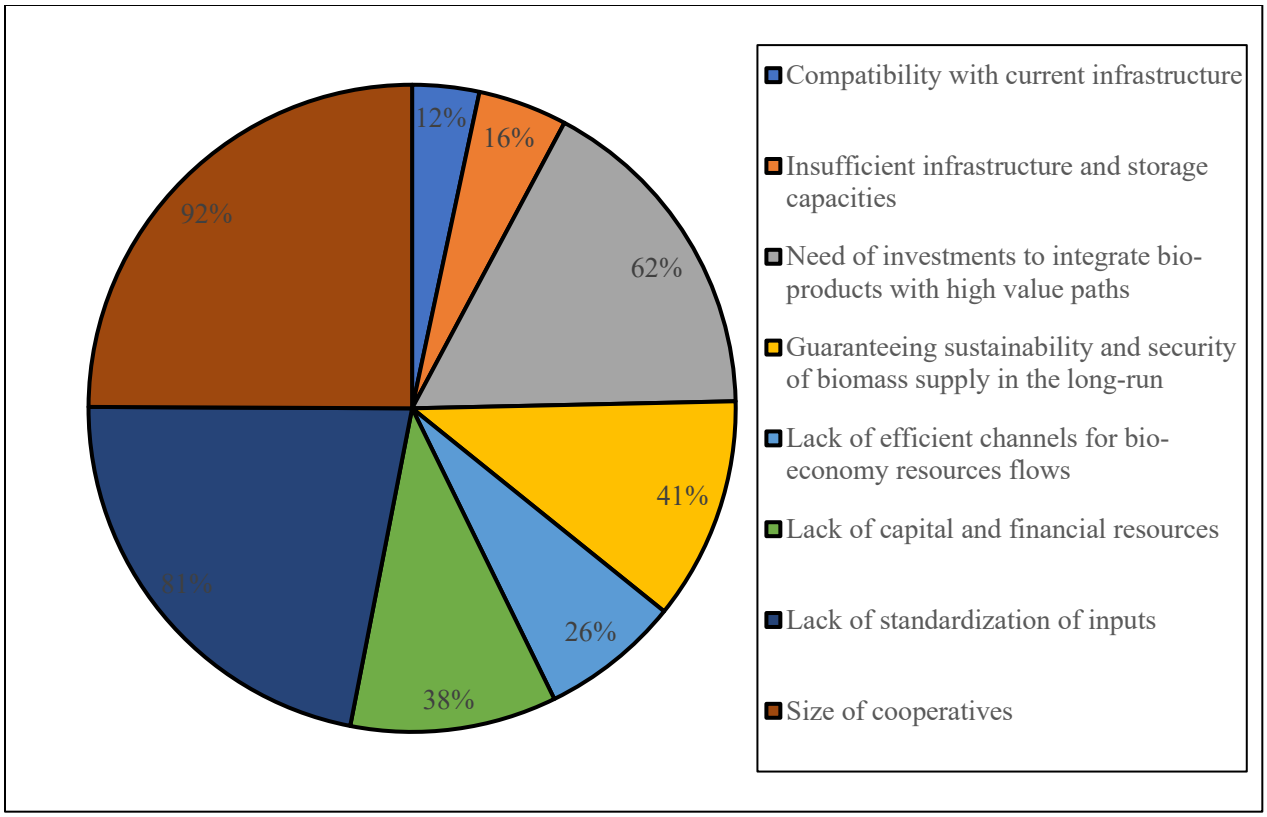


Figure 7 Supply chain management challenges

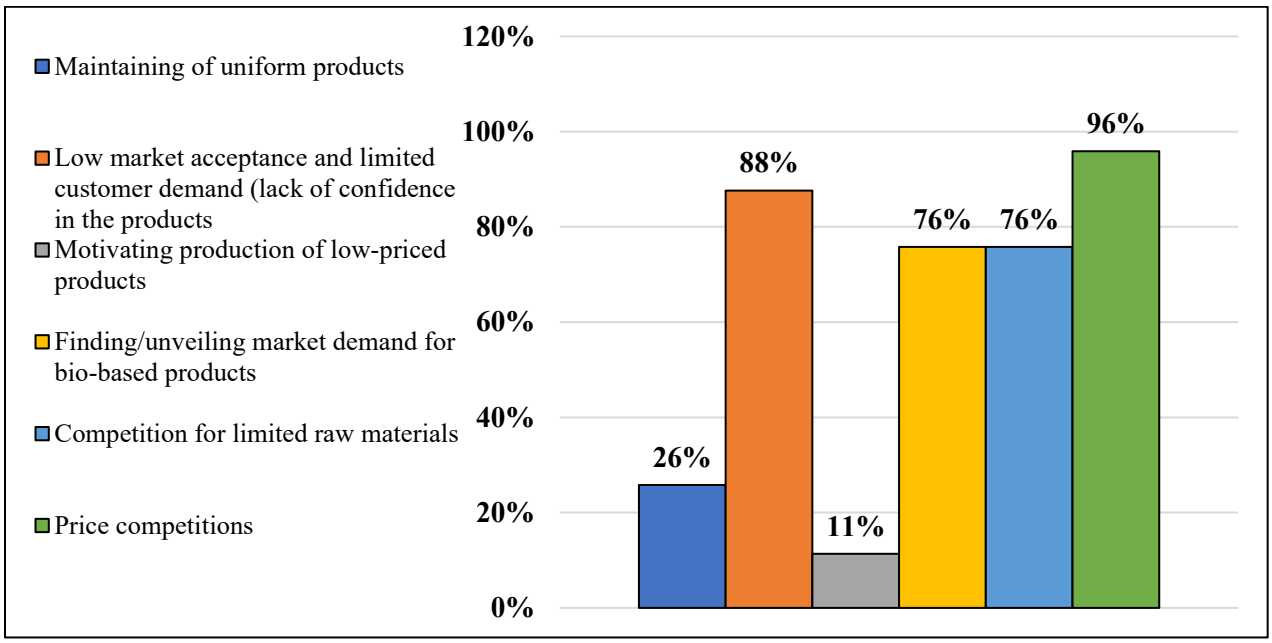


Figure 8 Marketing challenges

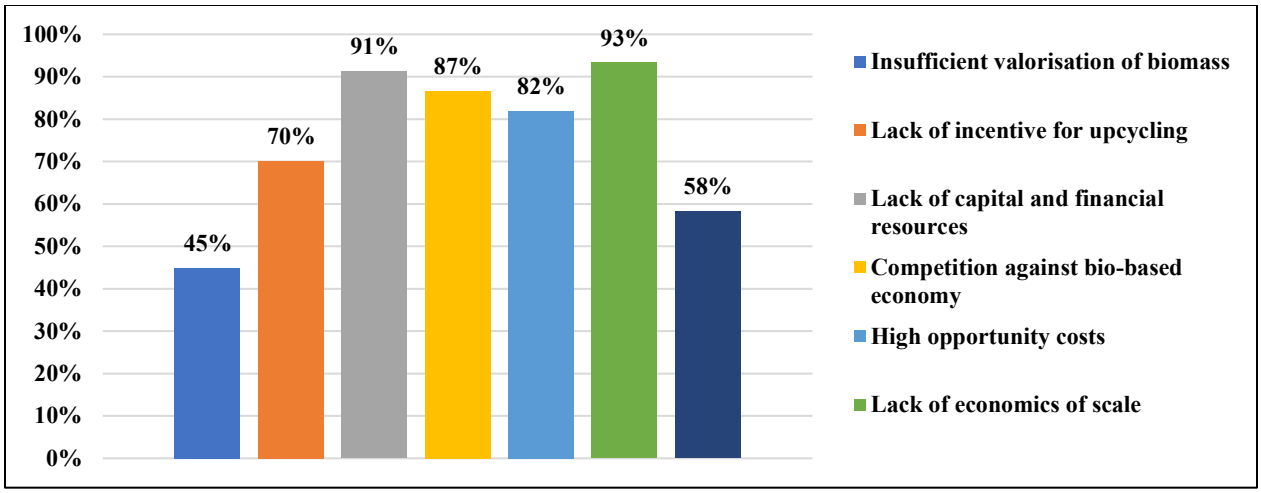


Figure 9 Economic challenges

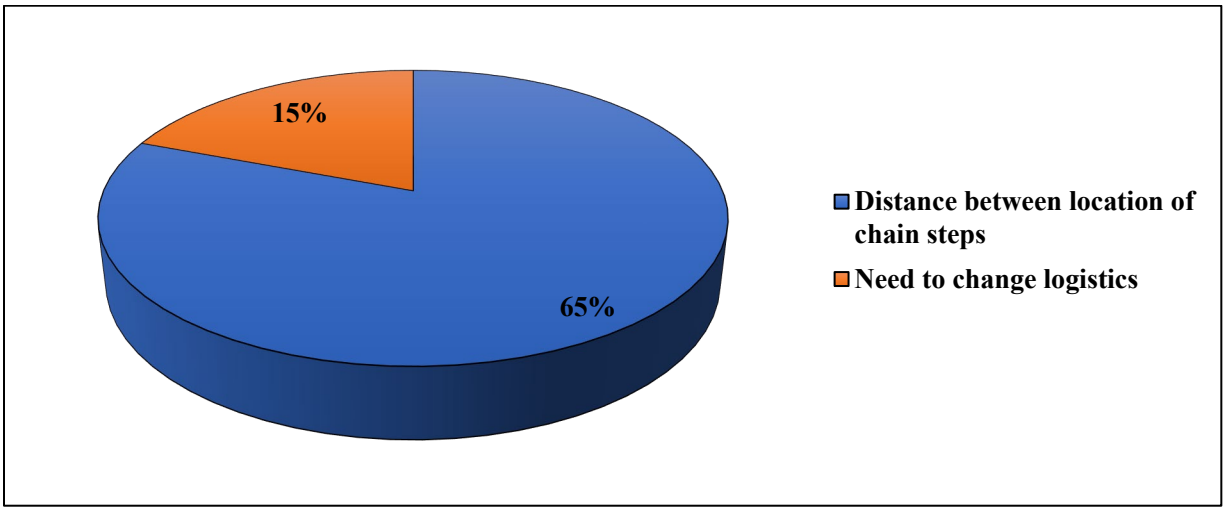


Figure 10 Geographical Changes

Overall, it is safe to conclude that the bio-economy model of cooperatives was imperative only if called upon an ecosystem-wide changes rather than an isolated effort. Aligning various key forces, identifying bottlenecks could only manifest shared sustainability vision. In conclusion, the bio-economy cooperative model was only effective when implemented as part of a wider ecosystem change, rather than as an isolated effort. It is important to align various key forces and identify bottlenecks in order to achieve a shared vision of sustainability.

Significance of the research to potential outcomes

The research outcomes will play a pivotal role in advancing knowledge generation in cooperative governance and bioeconomy approaches for rural development. This study seeks to provide insights that can be leveraged to tap into the economic opportunities presented by agricultural

cooperatives, contributing significantly to rural economies. The findings will not only inform policy dialogues but will also serve as a valuable resource for policymakers, researchers, and managers, facilitating a deeper exploration of new economic dynamics. This exploration aims to enhance governance structures, ultimately fostering the prosperity of local communities and maximizing the economic benefits of agricultural cooperatives.

Additionally, the study will conduct a thorough analysis of the potential for bioeconomy in rural development in Nepal. This analysis will include an examination of biomass availability, the unification of legislation in bioeconomy-related areas, opportunities for collaboration among stakeholders, the current status of biotechnology, and the possibilities for its use and further development. The research will center around how cooperatives and enterprises can be designed to sustainably utilize biomass, promoting local use, and supporting the overall rural development of the region. Emphasis will also be placed on the potential to enhance energy self-sufficiency and competitiveness, while concurrently assessing the associated risks and benefits of bioeconomy for the regions. In doing so, the study aims to elucidate how bioeconomy may establish bio-economic standards in the context of Nepal.

The study, in alignment with Bioeconomy (BE) approaches, envisions agricultural cooperatives as pivotal drivers for the development potential of the Tulsipur region. This initiative is anticipated to generate positive synergies and trade-offs, facilitating more effective local development planning. While the primary focus will be on the BE activities of representatives at the individual region level within Tulsipur Municipality, the study aims to contribute to the formulation of a regional development strategy. Such a strategy holds the potential to enhance the value and utility of subsequent national strategies. The analytical framework of the study serves as the foundation for integrating bioeconomy into rural development. By emphasizing the initiatives of individual representatives, it aims to stimulate public debate and propel socio-economic measures and technological outputs to a new qualitative level. In the long run, this process is anticipated to fortify the foundation of urban sustainability while ensuring the vitality of rural cooperatives.

5. Conclusions

The research addresses the crucial aspect of economic sustainability in agricultural cooperatives within Tulsipur sub-metropolitan city. By employing financial auditing, the study aims to quantify the economic sustainability of these cooperatives and assess their growth trajectory. The acquisition of loans is seen as a significant indicator, reflecting the mobilization of human

resources and the strategic decisions made by the cooperatives. This not only highlights their current financial preparedness but also signifies their proactive stance in facing upcoming challenges. The research recognizes the dynamic and enduring nature of the journey toward economic sustainability in these agricultural cooperatives. The research acknowledges the significant impact of the global economic crisis triggered by the COVID-19 pandemic and the Russia-Ukraine war on Nepal. It recognizes that the data collected might not fully capture the subsequent economic challenges faced by agricultural cooperatives. The crisis has led to the demise of many cooperatives, necessitating a reevaluation of their overall economic sustainability and urging them to explore survival options. In this context, the research serves as a crucial avenue to delve into economic opportunities within agricultural cooperatives. By facilitating policy dialogues, the study aims to unveil new economic dynamics, fostering improved governance and prosperity for local communities. The identification of successful economic practices and potential bottlenecks equips cooperatives to allocate resources more efficiently, enhancing their resilience for the long run.

Cooperatives Way-forward towards economic sustainability

Cooperatives, currently facing disruptive forces in the global economy, are encountering challenges that require resilience and adaptability. The impact of economic crises has left some cooperatives vulnerable, leading to their dissolution. In contrast, others, showcasing resilience, have explored mergers with successful counterparts. Given these dynamics, cooperatives must now navigate strategic directions to ensure their continued and successful operation. These directions include:

i. Product Diversification: Exploring organic products from agricultural byproducts, dairy product substitutes, and other income source diversifications, such as promoting bio-based industries

ii. **Enhanced Value Chain Supply:** Adopting sustainable agricultural practices like crop rotation, organic fertilizers, and natural pest control methods, thereby contributing to an enhanced value chain supply.

iii. **Government Assistance:** Seeking government assistance to ensure cooperative robustness and adapting to cooperatives' independency by diversifying markets, introducing new product lines like handicrafts or ecotourism, and expanding their customer base beyond local markets.

iv. **Active Stakeholder Participation:** Encouraging active participation of stakeholders in decision-making processes to ensure a collective and inclusive approach.

v. **Regular Audits and Reporting:** Implementing regular audits, financial reporting, and internal controls to maintain transparency and accountability.

vi. **Reducing Dependency in a Single Sector:** Diversifying operations to reduce dependency on a single sector, making cooperatives more resilient to economic shocks and climate-related disasters.

These strategic directions aim to equip cooperatives with the tools and flexibility needed to navigate challenging economic landscapes and secure their continued success. Indeed, the principle of "each for all and all for each" encapsulates the essence of cooperatives as powerful tools for rural development. This cooperative principle emphasizes the collective strength and mutual support among members, reflecting the idea that the success of each individual is intertwined with the success of the entire group. In the context of rural development, cooperatives play a vital role in fostering economic growth, social cohesion, and sustainable practices. By pooling resources, sharing knowledge, and working collaboratively, cooperatives empower communities to address challenges, seize opportunities, and create a more resilient and prosperous future for all.

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