

Research Paper: Assessing the Impact of Varied Livelihood on the Social Sustainability of Rural Areas (Case Study: Qaltuq County, Zanjan)

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ABSTRACT

Purpose: This study suggests that having a variety of ways to earn a living is important for sustainable development. This is because it helps to keep different parts of the economy and society in balance and stable and ensures that resources are used efficiently and that the community can adapt to changes. "Livelihood diversity" refers to having multiple sources of income or ways to make a living. "Sustainable development" refers to a way of growing and developing that meets the needs of the present without compromising the ability of future generations to meet their own needs. The current study discusses the impact of having multiple sources of income on different aspects of social sustainability.

Methods: This study is both quantitative and applied in nature. The research was conducted in 8 villages in the Qaltuq district of Zanjan city. To complete the questionnaire, a sample size of 300 was calculated using Cochran's formula. Data was collected through library and field research (questionnaire) and analyzed using structural equations.

Results: According to the research, livelihood diversity impacts various aspects of life, including social capital, social security, education, health, population dynamics, and quality of life. The respective values for each impact are 0.509, 0.454, 0.340, 0.290, and 0.305. This information was presented in the study's findings.

Conclusion: These findings were presented in the study. "Livelihood diversity" refers to having multiple sources of income or ways to support oneself. "Social capital" refers to the value of social networks and relationships in a community. "Social security" refers to having financial stability and support in times of need. "Population dynamics" refers to changes in the size and structure of a population over time.

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1. Introduction

Livelihood in rural areas primarily depends on agricultural activities, but sustainable development has led to a diversification of livelihoods based on social and economic participation (Larsen & Lilleør, 2014; Landrigan et al., 2018). However, it cannot be denied that agriculture still plays a significant role in people's lives, providing income, employment, and foreign exchange. Unfortunately, overexploitation of natural resources has become rampant in the last two decades, leading to complex global resource supply chains and increased environmental impacts (Steffen et al., 2015; Steffen et al., 2011). Living beyond environmental limits will make it difficult to achieve equality, justice, well-being, and a healthy quality of life for all. Urban areas have traditionally been seen as growth poles, while rural areas have been neglected (Friedmann, 1966).

Globally, policies promoting rural development have been recommended to assist in sustaining the well-being of rural populations by focusing on areas such as agriculture, handicrafts, small-scale, informal activities, health, nature, and the environment (De Noronha Vaz et al., 2006). The impact of any setbacks in these sectors would have a significant adverse effect on the livelihoods of rural communities (Imran et al., 2018). As a result, rural households acquire a range of skills and resources to enhance their living conditions and sustain themselves, as noted by Gautam and Andersen (2016), Akaakohol and Aye (2014), and De Janvry et al. (2005).

In the 1980s, the sustainable livelihood strategy was implemented as a means of diminishing or eliminating poverty in rural areas (Aazami & Shahnazi, 2020). As a result, in developing countries, most rural individuals generate 30-40% of their total income from non-agricultural sources. Households are capable of influencing and facilitating economic growth and the reduction of poverty globally (World Bank, 2017; Aloba Loison, 2015; Ellis, 1998).

Expanding the range of income-generating activities for local communities may result in negative effects on the environment and natural resources, as pointed out by Kassie (2017), Cordingley et al. (2015), and Assan and Beyene (2013). Villagers view sustainable development as a means to achieve sustainable livelihoods, according to You and Zhang (2017). Sustainable development is considered the overarching framework to tackle critical social issues such as poverty, gender inequality, and

climate change. However, there is a lack of a robust accountability system, as noted by Donald and Way (2016).

Currently, sustainable livelihood diversity research primarily focuses on three areas: analyzing the quantitative aspect of sustainable livelihood capability (as done by Zhang and Fan, 2020 (Scoones, 1998), investigating the impact of external interventions on sustainable livelihood capability (as studied by (Kansanga & Luginaah, 2019; Blumberg, 2018; Bremer et al. 2014), and examining the effect of livelihood capital on agricultural capability (as explored by Singh and Gilman, 1999). Livelihood diversification involves expanding the range of economic activities and markets in which an economy participates. This diversification can promote economic growth and reduce susceptibility to economic crises, market fluctuations, and technological advancements (Ferraz et al., 2021).

Traditional agriculture is the primary source of livelihood for households in the studied area and other rural areas of Zanjan city. However, there is potential for improvement and diversification in this sector, which could lead to economic and social sustainability. The relationship between economic diversity and social sustainability is a complex topic with varying opinions. Economic diversity can create more job opportunities, attract investments, and improve living standards, ultimately leading to social stability. However, it can also cause economic and social inequalities, environmental destruction, and social failures. Therefore, it is important to evaluate the relationship between economic diversity and social sustainability based on local conditions and factors. This article aims to determine the dimension of social stability that has the greatest impact on livelihood in the studied villages.

2. Literature Review

Livelihood involves utilizing one's skills and resources to establish a certain standard of living. Conversely, livelihood capital encompasses the vital human, social, natural, physical, and financial resources necessary for individuals to maintain their livelihoods during times of unexpected challenges, independent of any natural resources (Habib, 2021; Ansoms & McKay, 2010; Iiyama et al., 2008; Ellis, 2000a).

Livelihood encompasses how individuals sustain their existence and the resources that ensure their quality of life (Mutenje, 2010). The diversification of livelihood pertains to the assortment and amalgamation of options

and methods for generating income (Liu & Liu, 2016; Aloblo Loison, 2015).

Livelihood diversification, as defined by Niehof (2004), refers to the gradual process in which households create a variety of income sources. This practice is crucial in fostering economic growth and alleviating rural poverty in developing nations, as highlighted by Loison (2019).

Currently, households in developing nations are attempting to mitigate risks and deal with economic and environmental upheavals by diversifying their livelihood activities (Baird & Hartter, 2017; Gautam & Andersen, 2016; Martin & Lorenzen, 2016). Offering alternative non-agricultural occupations, livelihood diversification is crucial for sustainable ecological development and reducing rural poverty (Liu & Lan, 2015).

Diversity is often cited as a crucial aspect of social sustainability in various discussions. Researchers have highlighted the importance of resource distribution within and between groups, as well as access to services for individuals of different income levels, genders, ethnicities, and abilities. Livelihood diversification, which involves individuals sacrificing some anticipated external income to reduce income diversification by selecting a specific set of assets and activities, is also seen as a form of self-examination. This transition is generally viewed as a shift away from agricultural income. These ideas have been discussed by scholars such as Vallance et al. (2011), Grosser (2009), Littig and Griessler (2005), Abdulai and CroleRees (2001), Barrett et al. (2001), Adesina et al. (2000), and Ellis and Allison (2004).

The concept of livelihood diversification among farming households involves rural individuals expanding their income-generating endeavors without regard for the sector or area they operate in (Martin & Lorenzen, 2016; Aloblo Loison, 2015; Brandth & Haugen, 2011). Households can enhance their lives and minimize risk through various activities, as mentioned by Aniah et al. (2019) and Baird and Hartter (2017).

Households engage in various activities to mitigate risk and enhance their well-being by minimizing it, as per Aniah et al. (2019) and Baird & Hartter (2017). The adoption of diverse activities is influenced by multiple factors, including education level, livestock count, farming experience, and more, according to Akhtar et al. (2019).

The primary factors determining the strategy for diversifying livelihoods are the head of the household's age, possession of agricultural land, and proximity to markets and raw materials. This has been noted in studies conducted by Corral and Radchenko (2017) and Tesfaye et al. (2011).

Various perspectives drive livelihood diversification among farming households. One school of thought posits that it is a coping mechanism against vulnerability to calamities, lack of resources, and destitution. Conversely, others maintain that it is a response to the desire for a wider range of opportunities and incentives to enhance their standard of living and augment income (Ellis, 2000b).

Many individuals across the globe aim to enhance their well-being and achieve their objectives through livelihood diversification, according to Ayana et al. (2021). Social stability, as defined by Spacey (2020), refers to the level of predictability and dependability of society and its establishments. Insecurity is the antonym of the concept being described here. The significance of social stability lies in its ability to provide a platform for individuals and groups to plan and execute their activities without any hindrance. This is the primary objective of any society (Spacey, 2020).

Every society strives to be stable because social stability creates a uniform and just society where there is social solidarity between people that encourages them to cooperate and make society better (Nomishan, 2021).

Various social, economic, and environmental factors influence the diversity of livelihood activities and social stability. These factors include human capital variables such as family size, age, education, and contact with extension; location variables like road access, distance to markets and cities, and availability of electricity, basic household resources, and social organization such as sustainable assets, access to irrigation, media, and cooperation, financial assets like total income, deposits, and access to credit, and risk measures such as exposure to shocks. Studies by Yizengaw et al. (2015), Kimsun & Sokcheng (2013), Khatun & Roy (2012), Lanjouw et al. (2007), Mollers & Buchenrieder (2005), De Janvry & Sadoulet (2001), Woldenhanna & Oskam (2001), Barrett et al. (2001), and Reardon et al. (1998) have highlighted the importance of these factors in determining livelihood diversity and social stability.

Self-employment activities are crucial in the less developed world, with agriculture being one of the most

significant. These activities can be categorized into agricultural production, small-scale production, providing services, and trading. Risk reduction and loss management strategies involve exposure to risk, enhancing resilience, and increasing sensitivity, as suggested by Haidar (2009) and Scoones (2009). Additionally, agricultural production can encompass agricultural products, aquaculture, and livestock, while the other category entails agriculture or processing.

In foreign research, factors such as wealth, capital/human and financial assets (Kassa, 2019; Martin & Lorenzen, 2016), membership in cooperatives (Kassie et al., 2017; Echebir et al., 2017), monthly income and livelihood dynamics (Musumba et al., 2022; Habib et al., 2022; Dai et al., 2019; Echebir et al., 2017) Opportunity to migrate (Nguyen et al., 2020; Martin & Lorenzen, 2016) Household size Head of household education (Echebir et al., 2017) Land ownership (Kassie et al., 2017; Hosseini et al., 2022) Labor capacity (Dai et al., 2019) Tourism (Kimbu et al., 2022) Natural hazard shock such as drought (Musumba et al., 2022) intensification and expansion of agriculture (Nguyen et al., 2020) are effective in creating livelihood diversity.

Contrary to factors such as limited capital, inadequate infrastructure, limited access to credit services and markets, and insufficient agricultural land and supporting evidence (Roscher et al., 2022), diversity encounters challenges. Conversely, Gautam & Andersen (2016) found in their study that diverse livelihoods contribute to income inequality and diminished well-being. The unique aspect of this research lies in its exploration of the impact of livelihood diversity on the social sustainability of the villages under study. This area has not been previously investigated.

3. Methodology

The present study is categorized as applied research and utilized a survey method for data collection. The statistical population consisted of eight villages in the Zanjan township, specifically Qaltoq village, which had 1261 households and 3509 individuals according to the latest census. Cochran's formula was used to determine that 300 questionnaires were required for the study, and simple random sampling was used to select participants from each village. The data collection tool was a researcher-made questionnaire consisting of two parts: the first part included demographic information such as age, education, and marital status, while the second part measured livelihood diversity (18 items) and social sustainability in terms of social capital (18 items), social security (8 items), education and health (9 items), population dynamics (7 items), and quality of life (11 items). Cronbach's alpha coefficient was used to confirm the reliability of each dimension. The research data was analyzed using the Emos software.

Qaltouq County, a part of Zanjan township, has been the focus of the study. This village is in Zanjan province and falls under the Zanjan River district. As per the 2015 census, Qaltouq has a population of 3509 people residing in 1261 households across eight inhabited villages. It is situated towards the west of Zanjan province. It shares its borders with Chaipareh Pain, Bala, and Zanjanrud villages to the north, Qaltoq village, Zanjan River Bala, and Bogdakandi villages to the south, and Mah Nishan city from the west, which is adjacent to Qara Pashtlu village in the east.

Table 1. Cronbach's alpha related to the constructs of the questionnaire

Cronbach's alpha	Sources	Number of items	Dimensions
0/78	Talshi & Seyed Daghlaghi, 2018; Roknedin eftekhari et al., 2014	18	Livelihood diversity
0/76	Dadvar Khani et al., 2013	18	Social capital
0/77	Rezvani et al., 2015	8	Social Security
0/77	Akbarian & Sheikh Biglou, 2016	9	Education and health
0/84	Fatahi et al., 2012	7	Population dynamics
0/82	Anabestani et al., 2016	11	Quality of Life

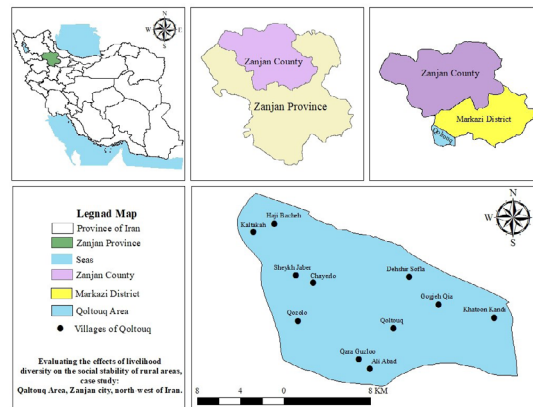


Figure 1. Geographical location of the study area

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4. Findings

The study analyzed 300 households, where most of the population (88.7%) were men and only a small percentage (11.3%) were women. The age group between 36 and 45 had the highest representation, with 195 people (32.3%). The study also revealed that 9.4% had no formal education, while more than 19.3% had obtained a bachelor’s degree or higher. The supplementary ques-

tionnaire showed that most household heads (39.5%) worked in agriculture, followed by laborers, clerks, and animal husbandry. The average monthly income in the area was 730 thousand tomans, with the highest income group earning between 500 thousand to one million Romans. This income group constituted nearly half of the population. For further details, refer to the additional findings provided (Table 2).

Table 2. Distribution of respondents according to personal and job characteristics

Other statistical indicators	Percent	Abundance	Levels	Variable
Fashion: Man	90/33	271	Man	gender
	9/67	29	woman	
Average: 21/44 Fashion: 42 Standard deviation: 15/5 Minimum: 30 Maximum: 81	7	21	Under 25 years	age (years)
	12/66	38	26-35	
	38/66	116	36-45	
	18/66	56	46-55	
	20/33	61	56-65	
	2/66	8	Up 66 and Up	
Average: 3.67 Standard deviation: 1-36 Fashion: 4	6	18	Less than two people	Family size
	56	168	2-4 people	
	31	93	5-7 people	
	7	21	Seven people and more	
Fashion: middle school and under diploma	8	24	uneducated	education
	20/33	61	Primary	
	52/66	158	Guidance and sub-diploma	
	10/66	32	diploma	
	8/33	25	Bachelor’s degree and higher	
Fashion: Agriculture	36	108	agriculture	Job
	13/66	41	Employee	
	12	36	manual worker	
	13/66	41	free	
	24/66	74	animal husbandry	

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The five dimensions of social sustainability and livelihood diversity are described before discussing the measurement models. The descriptive findings indicate that social security has the highest average (3.64), while education and health have the lowest average (2.81).

To create an experimental model using Amos software, the variables related to each dimension were de-

scribed and six first-order factor analysis models were developed and validated. Figure 2 shows that the factor loadings for each variable in the models are favorable. To assess the overall fit of the measurement models for the six dependent dimensions of the research, important evaluation indicators were removed from documented sources and compared to the proposed criteria (Figure 2).

Table 3. Descriptive findings related to the average dimensions of social sustainability and livelihood diversity

Average	Dimensions
3/15	Livelihood diversity
3/11	Social capital
3/64	Social Security
2/81	Education and health
2/91	Population dynamics
2/91	Quality of Life

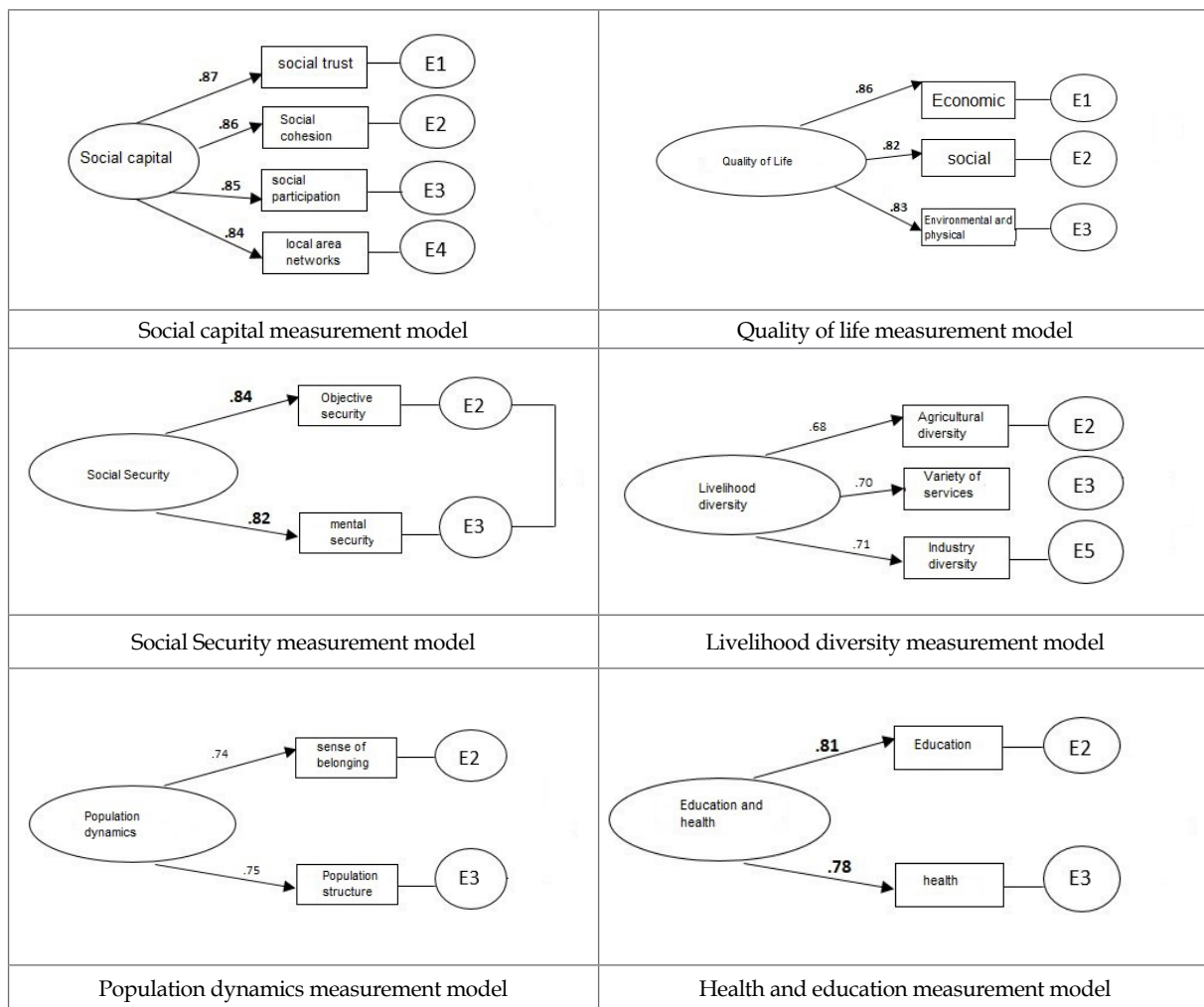


Figure 2. Factor load related to the observed variables of each of the six research dimensions



The estimated criteria show a high level of agreement with the proposed criteria, indicating that the four measurement models meet the necessary conditions and are valid for designing the final model of the consequences of livelihood diversity. The models demonstrate social sustainability. After fitting all the dependent variables into the four measurement models, the Amos Graphics environment created the livelihood diversity model on social sustainability. The model openly uses the social stability index and secretly uses the dependent variables. Upon examining the fitting status of the final model, it is evident that it has the necessary validity and precision to

explain the effects of livelihood diversity on social sustainability.

The study first evaluated how well the livelihood diversity model fit with the social sustainability of the research area. Then, the researchers looked into how livelihood affects the social sustainability of the study. The presented model already showed the direct effects of livelihood on social sustainability. The findings indicate that livelihood diversity impacts social capital, social security, education and health, population dynamics, and quality of life, with values ranging from 0.290 to 0.509. (Table 6).

Table 4. Dimensions of the overall evaluation of the measurement model of the dependent variables of the research

PRATIO	NFI	GFI	RMR	HOELTER	RMSEA	CFI	CMIN/DF	DF	CMIN	Dimensions
0/300	0/888	0/891	0/010	199	0/046	0/883	3/249	2	7/021	Livelihood diversity
0/300	789	0/890	0/008	480	0/036	0/889	1/117	2	6/724	Social capital
0/177	0/902	0/911	0/001	3037	0/01	1	0/179	1	0/179	Social Security
0/400	0/882	0/881	0/007	489	0/030	0/889	1/079	4	4/489	Education and health
0/314	0/911	0/871	0/005	281	0/041	0/781	4/147	2	4/417	Population dynamics
0/351	0/920	0/891	0/004	471	0/039	0/841	6/258	3	5/247	Quality of Life
1-0	0/9<	0/9<	0	75<	0.05>	0/9<	Five>	-	-	Suggested values

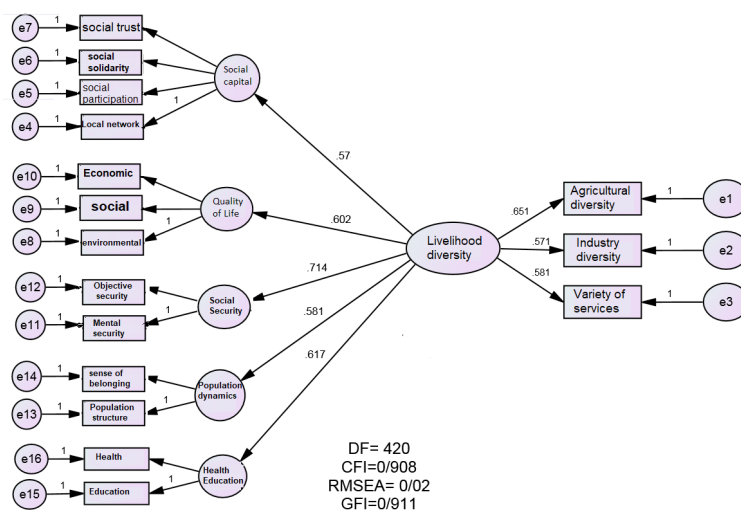


Figure 3. The final model of the structural equation of livelihood effects and consequences on social sustainability



Table 5. Dimensions of the overall assessment of the consequences model and the effects of livelihood diversity on social sustainability

PRATIO	NFI	GFI	RMR	HOELTER	RMSEA	CFI	CMIN	DF	CMIN	Dimensions
0/936	0/990	0/911	0/11	115	0/02	0/908	2/619	420	91/70	Amounts
1-0	0/9<	0/9<	0	75<	0/05>	0/9<	-	-	-	Suggested values



Table 6. Estimation of standard, non-standard, and total livelihood diversity effects on dependent variables of the research

sig	total effect	Critical ratio	estimate		dependent variable	independent variable
			Non-standard	Standard		
0/000	0/509	17/648	0/509	0/109	Social capital	
0/000	0/454	15/918	0/454	0/108	Social Security	
0/000	0/340	12/821	0/340	0/102	Education and health	Livelihood diversity
0/000	0/290	9/358	0/290	0/091	Population dynamics	
0/000	0/305	7/281	0/310	0/114	Quality of Life	



5. Discussion

The research findings indicate that having various livelihood options can enhance both social and economic participation, thus contributing to sustainable development. This article examines the impact of livelihood diversity on social sustainability within the studied area. Firstly, having diverse livelihoods enables optimal utilization of resources, as it encompasses various economic sectors such as agriculture, industry, and services. This leads to improved productivity and avoids overreliance on a single sector. Secondly, livelihood diversity creates job opportunities across different sectors, promoting economic development and reducing unemployment rates, thereby strengthening social stability. Thirdly, it reduces pressure on natural resources, as traditional agriculture, fishing, and tourism-based livelihoods help preserve biodiversity and protect the environment. Lastly, diversification of livelihoods provides a buffer against economic changes such as market fluctuations and technological advancements. This contributes to social sustainability by safeguarding against risks associated with such changes. According to [Kassie et al. \(2017\)](#), diversifying household livelihoods during low agricultural activity can increase income. [Habib et al. \(2022\)](#) suggest that rural diversity determines the allocation of household assets and labor resources across different livelihood activities. Household composition also plays a role in livelihood diversity and income, as noted by [Hackman & Kramer \(2021\)](#). [Pardhan et al. \(2021\)](#) further state that education, land ownership, annual income, innovation, contact with extension services, social participation, exposure to media, and economic and risk orientation are positively correlated with livelihood security.

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Conflict of Interest

The authors declared no conflicts of interest.

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