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# ECONOMIC IMPACT OF CHHURPI PRODUCTION ON FARMERS' LIVELIHOOD

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**Abstract:**
This study explores the economic impact of chhurpi production on the livelihoods of rural farmers in Kalinchowk Rural Municipality ward no. 1, Dolakha District, Nepal. Employing a descriptive research design and a census method, 22 chhurpi producers were selected as informants. Data were gathered through questionnaires, interviews, and observations, supplemented by secondary data from literature reviews. The findings reveal that chhurpi production significantly contributes to boosting the income of farmers, with active participation from both men and women in the production process. Despite its economic benefits, the study identifies challenges such as transportation difficulties, climate change, and insufficient income, which compel farmers to diversify their earnings through ghee, cheese, and agricultural activities. The research underscores the vital role of chhurpi in sustaining rural livelihoods and advocates for enhanced government support and improved infrastructure to ensure the long-term viability of this traditional industry.

**Keywords:** chhurpi, dairy farming, economic impact, farmers, livelihood

## 1. Introduction

Animal husbandry has long been essential to Himalayan civilizations, with dairy being a key part of their culture. Chhurpi, a hard, fermented milk cheese, was invented to utilize leftover milk and is now produced in China, Bhutan, and Nepal, often called Himalayan chewing gum (World Bank, 2022). Nepal, a developing, landlocked country between

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India and China, has a population of 29.16 million and an agriculture-based economy, contributing 23.95% to its GDP and employing 67% of the population. Despite progress, 20.27% still live below the poverty line, and 23% earn less than $1 per day (CBS, 2021).

Farming is the primary economic activity for most people in Nepal, with livestock playing a key role in the rural economy. Livestock, especially dairy farming, is a major source of income and employment, contributing to agricultural production and national output while creating job opportunities in rural areas. Dairy farming significantly impacts farmers' livelihoods, not only through employment but also by generating income, improving nutrition, and influencing social dynamics. Sustainable dairy production is crucial for improving the economic well-being of rural farmers.

Nepal produces a variety of dairy products, including paneer, milk, yoghurt, butter, cheese, ice cream, mohi, kurauni, khuwa, and chhurpi. Chhurpi, a traditional Himalayan cheese, is made by coagulating milk from cows, buffaloes, chauris, and yaks (female yaks). It is available in soft and hard varieties, with the soft version used in cooking and the hard one valued for its long shelf life and dental benefits. Chhurpi has gained international recognition, especially as a dog chew, and its market is expanding due to increasing global demand. The economic benefits of chhurpi production are significant for rural communities in Nepal, contributing to their livelihoods and cultural preservation.

For individuals to make a living, the yak and chauri selling scenario in the highlands and high hills of Nepal is crucial. In order to boost yak populations' production in hilly regions of Nepal, Tibetan yak breeds are brought from China and Tibet to Taplejung, Sankhuvasabha, Solukhumbu, Dolakha, and Humla. Similarly, high-value, low-volume goods with strong international demand include ghee, chhurpi, and yak cheese. Yak cheese exports to other nations provide Nepal with a significant foreign exchange that supports economic growth. The people living in the high hills and mountains need to create efficient marketing channels to reach the local and worldwide markets in order to generate revenue (Joshi, 2005).

Dairy farming is significantly impacted by climate change. It impacts dairy cattle in a number of ways, such as sickness and fodder shortages. The development of grass species in pasture and woodland fodder is impacted by the severe drought. This results in a lack of high-quality, diverse livestock feed. This has an impact on cattle feed. Livestock has been impacted, which has had an impact on the production of meat, milk, and milk products. Climate change is also causing a decline in the number of livestock. Drought reduced the amount of drinking water available to cattle and dried up wetlands, grazing land, streams, and water supplies. Raising temperatures are also having an impact on cattle, which are prone to various newborn illnesses (Dahal, 2011).

## 2. Research Problem

In Nepal, agriculture forms the backbone of rural livelihoods, supplemented by various local industries, among which chhurpi production plays a significant role. This traditional dairy-based industry not only contributes to income generation but also

supports food security in rural communities. However, despite its importance, the chhurpi industry faces persistent challenges related to production efficiency, quality control, and food safety standards. While efforts to enhance dairy processing sector of Nepal have targeted these issues, farmers, particularly in remote areas, continue to grapple with economic difficulties and production constraints.

In Kalinchowk Rural Municipality ward no. 1, where access to large markets is limited, chhurpi production is a critical livelihood source for the community. However, vulnerabilities such as inadequate infrastructure, transportation challenges, and the effects of climate change threaten the sustainability of this traditional industry. These challenges highlight the need for a deeper understanding of the economic impacts of chhurpi production on farmers' livelihoods and the potential measures to address the vulnerabilities of industries and promote their sustainability.

## 3. Objectives of the Study

The general objective is to evaluate the overall economic impact of chhurpi production on rural farmers, including the advantages to their economic livelihoods and the challenges they face in the production process. The specific objectives are as follows:

1) To examine the economic impact of chhurpi production on farmers' livelihood,
2) To find out the challenges faced by farmers in chhurpi production.

## 4. Literature Review

The Department for International Development (DFID) framework suggests that sustainable livelihood is a useful tool to measure the economic and social impact on communities. The framework emphasizes the importance of natural, human, financial, social, and physical capital in helping rural households secure their livelihoods (DFID, 1997). This approach is particularly relevant for understanding the economic impact of chhurpi production, which contributes to several of these capitals. Economically, chhurpi production generates income for farmers, while socially, it strengthens community networks and preserves cultural identity. These factors play a vital role in improving the livelihoods of rural farmers and enhancing their standard of living.

Local Economic Development (LED) theory supports the empowerment of local farmers by helping them take control of their economic activities (Blakely & Leigh, 2013). By efficiently utilizing local resources, farmers can generate sustainable economic opportunities (Hong & Gordon, 2014). This theory applies to chhurpi production, which relies on local milk, traditional knowledge, and indigenous processing methods. By improving packaging, branding, and market access, farmers can increase the market value and demand for chhurpi. As a local product deeply rooted in culture, chhurpi enhances farmers' bargaining power, promotes cooperative efforts, and retains more economic value within the local economy. Thus, chhurpi production contributes to stable and sustainable livelihoods, reducing poverty and improving overall well-being.

Agricultural commercialization theory highlights the shift from traditional subsistence farming to modern, market-oriented production, leading to higher income levels and improved living standards for farmers (Pingali, 2001). In high hill and mountain areas of Nepal, chhurpi production has transitioned into a key commercial activity. Many farmers are adopting modern technologies, branding, and packaging techniques to commercialize chhurpi production, leading to increased income stability. This commercialization also contributes to broader economic growth and urbanization in these rural regions.

The dual economy theory, which outlines the coexistence of traditional agricultural and modern industrial sectors, helps explain the role of chhurpi production in the rural economy. According to this theory, the traditional sector, characterized by low productivity, supplies labor to the modern sector, which has higher productivity and wages (Lewis, 1954). Chhurpi production represents the traditional sector with its low capital investment and small-scale production, yet it remains vital for the livelihood of farmers. The income from chhurpi helps farmers meet their household needs, but the overall productivity and income remain low compared to modern agricultural practices. By adopting improved techniques, accessing larger markets, and adding value, farmers may increase their income and living standards.

The theory of microfinance emphasizes the role of financial services in empowering small-scale producers by providing the economic tools necessary to improve productivity. Access to finance allows farmers to invest in technology, better livestock, and improved processing techniques, which can lead to higher output and quality (Armendariz & Morduch, 2005). For chhurpi production, this access to finance is critical, as the process requires specific skills, labor, and tools. With financial support, farmers can enhance the quality of their chhurpi, leading to higher market value and increased income.

Although previous studies have explored the economic impact of dairy production on rural farmers, there is limited research specifically focused on chhurpi production. Chhurpi, a traditional product with significant cultural and economic importance, particularly in the rural Himalayan areas, deserves more targeted research. While there is some research linking chhurpi production to food security and employment growth, gaps remain in areas such as market access, transportation challenges, and the difficulties farmers face in the production process. Previous studies have concentrated on regions like Ilam, Solukhumbu, Sankhuwasabha, Rasuwa, and Sindhupalchowk, but there has been no research in Kalinchowk Municipality-01, Dolakha. This study focuses on the Kuri, Gairi, and Ghyang rural villages to assess the economic impact of chhurpi production on the livelihoods of farmers and to explore the challenges they encounter in this area

## 5. Methodology

The study utilized a descriptive design, combining both qualitative and quantitative methods to comprehensively analyze and assess the economic impact of chhurpi

production on farmers' livelihoods in Kuri, Gairi, and Ghyang villages of Kalinchowk Rural Municipality ward no. 1, Dolakha.

### 5.1 Sample Size

A census method was employed to ensure the inclusion of participants with relevant experiences of Chhurpi production. There are only 22 households involved in Chhurpi Production. Therefore, the researcher selected the entire population for the study in the research area.

### 5.2 Data Collection Techniques and Tools

Primary data was collected through questionnaires, interviews, and observations using the census method, focusing on 22 chhurpi producers. Secondary data was sourced from journals, reports, and government records.

### 5.3 Data Analysis

Quantitative data were analyzed and presented using tables, charts, and diagrams to illustrate trends and relationships vai MS Excel and SPSS. Qualitative insights were synthesized to complement the findings, providing a deeper and more nuanced understanding of the study outcomes.

### 5.4 Description of Study Area

Dolakha district, part of Bagmati Province, is a remote hilly region located 183 km from Kathmandu, covering 2,191 sq. km. Its district headquarters is in Charikot, and according to the 2021 census, the population is 172,276. The district is bordered by China to the north and east, Ramechhap to the west, and Sindhupalchowk to the south. Dolakha is renowned for natural landmarks like Gaurishankar Himal, Tsho Rolpa Glacier Lake, and Jiri, as well as religious sites such as Kalinchowk Bhagawati and Dolakha Bhimsen temples. The Upper Tamakoshi River, flowing through the district, supports Nepal's largest hydroelectric project (456 MW).

Dolakha consists of 9 municipalities, including Kalinchowk Rural Municipality, which spans 132.49 sq. km, with a population of 21,097 and a literacy rate of 72% (79% male and 65.4% female). Kalinchowk Rural Municipality is situated at the foot of Gaurishankar Himal, with ward no. 1 designated for yak farming. This study focuses on areas such as Kuri, Gairi, and Ghyang, where chhurpi production is actively practiced.

## 6. Results and Discussion

Chhurpi production contributes to the livelihoods of farmers in Kalinchowk Rural Municipality ward no. 1 by providing a vital source of income and employment. Both men and women actively participate in the production process, reflecting its inclusive economic role. However, challenges such as inadequate infrastructure, limited market access, and climate-related vulnerabilities hinder the growth of small industries. Despite these obstacles, farmers diversify their livelihoods by engaging in complementary

activities such as ghee and cheese production. The results underscore the need for targeted interventions, including improved transportation, technical support, and market development, to enhance the economic impact of chhurpi production and ensure its long-term sustainability.

### 6.1 Farmers' Involvement in Chhurpi Production

The involvement of respondents in any occupation reflects important insights into the duration and experience of the participants engaged in the occupation. Based on data collection, the finding shows that a significant number of participants i.e. 36.36 percent have been involved in the chhurpi production for 6-10 years. This data clearly suggests that chhurpi production is well-established for many of them, with the major group having gained considerable experience. In addition, the research also demonstrates that 22.72 percent of respondents have been involved in chhurpi production for 16-20 years which indicates that this occupation has a dedicated group of customers. The 18.18 percent involved for 11-15 years and another 18.18 percent for 21-25 years suggest that chhurpi manufacturing is a long-term commercial activity that may be passed down from generation to generation.

**Table 1:** Farmers' Involvement in Chhurpi Production

| SN | Chhurpi Business Time (in years) | Frequency | Percent (%) |
|---|---|---|---|
| 1 | 0-5 | 1 | 4.54% |
| 2 | 6-10 | 8 | 36.36% |
| 3 | 11-15 | 4 | 18.18% |
| 4 | 16-20 | 5 | 22.72% |
| 5 | 21-25 | 4 | 18.18% |
| | **Total** | **22** | **100%** |

**Source:** Field survey (2024).

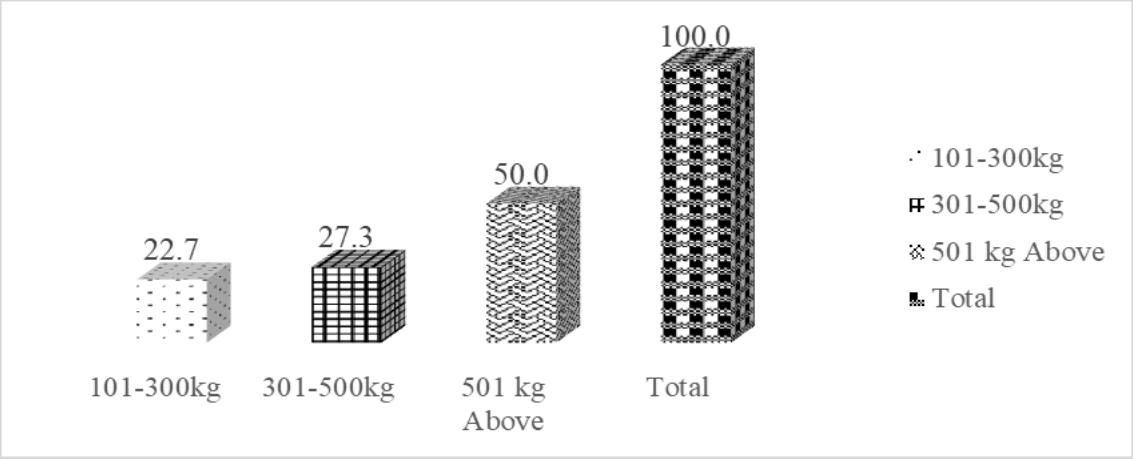
Interestingly, just one responder (4.54 percent) of the total respondents has stayed in the chhurpi production for less than 5 years for certain reasons, which might have difficulty for them to enter this sector, or it can also be understood that the incidence rate of new entrants to this sector is rather low. This may imply entrance barriers or reliance on accrued experiences and expertise of generations, which act as entry barriers in chhurpi production. This chhurpi business is sustained by experienced producers, with few new entrants. Finally, this research led to discussions on factors like the role of tradition, knowledge transfer, market challenges, and the potential for modernization or business expansion for younger generations.

### 6.2 Production of Chhurpi Annually

Chhurpi production in Kalinchowk represents not only a tradition but a vital economic activity that sustains the livelihood of many local farmers. With proper support and innovation, it holds the potential further to improve the well-being of communities in this rural region.

Figure 1 shows that a smaller group, 22.7 percent of respondents, produces between 101 and 300 kilograms of chhurpi per year. Around 27.3 percent of the respondents produce between 301 and 500 kilograms annually. Half of the respondents (50 percent) produce more than 501 kilograms of chhurpi in a year. This indicates that a significant portion of the group engages in large-scale production.

**Figure 1:** Production of Chhurpi Annually (N = 22)

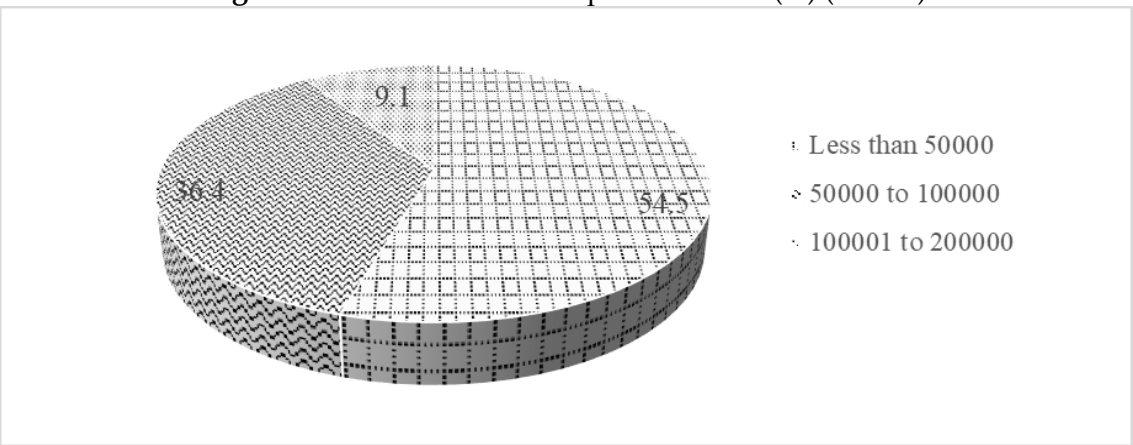



**Source:** Field visit (2024).

### 6.3 Income from Chhurpi Production

The income generated from selling chhurpi helps families cover essential expenses such as education, healthcare, and household needs. The growing popularity of chhurpi, especially among tourists visiting the region, has further boosted farmers' earnings. Despite challenges like limited market access and infrastructure, chhurpi remains a key contributor to the local economy.

**Figure 2:** Income from Chhurpi Production (%) (N = 22)



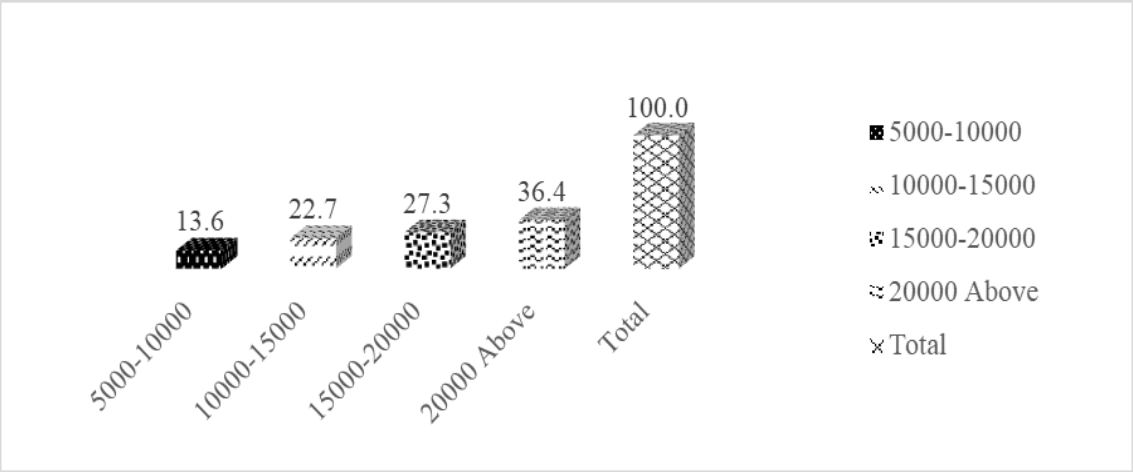

**Source:** Field visit (2024).

According to Figure 2, the majority of respondents, 54.5%, earn less than 50,000 (currency not specified) from their chhurpi production. A significant portion, 36.4%, earns between 50,000 and 100,000. This group earns a moderate income from their chhurpi production, and a small group, 9.1%, earns between 100,001 and 200,000. These respondents are generating higher incomes from their production, representing the top earners in this group.

### 6.4 Monthly Expenses of Producers

Figure 3 shows that the monthly expenses of 22 respondents as a percentage of the total sample. 36.4 percent of respondents spend more than Rs.20,000 per month, making this the largest expense category, 22.7 percent of respondents spend between Rs.10,000 and Rs.15,000 monthly, 27.3 percent have expenses between Rs.15,000 and Rs.20,000, and last and lowest expense category is 13.6 percent spend Rs.5000 to Rs.10000 per month.

**Figure 3:** Monthly Expenses of Producers (%) (N = 22)



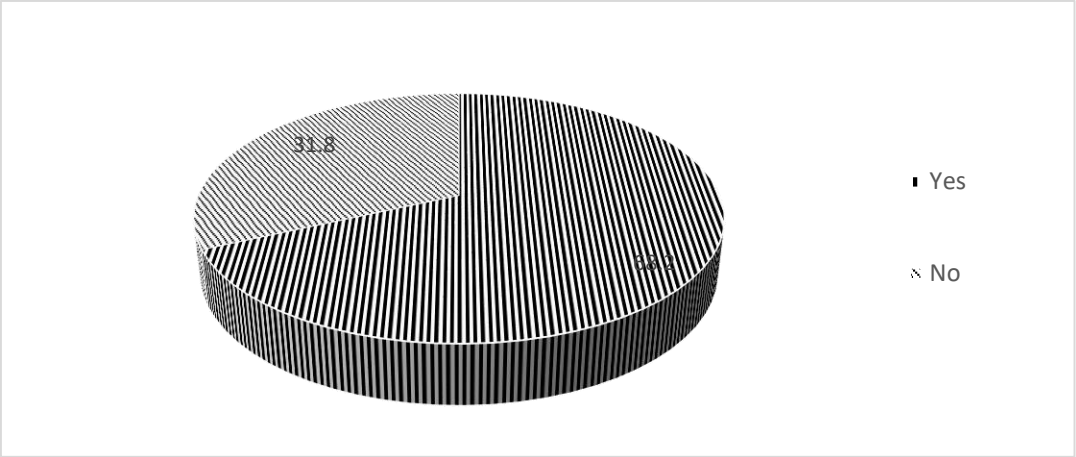

**Source:** Field visit (2024).

This variety in spending highlights the different expenses respondents make towards their children's education, health, food, and livestock, which are all critical aspects of maintaining their livelihoods and well-being.

### 6.5 Income/expenses Comparison for Chhurpi Production

Income from chhurpi production generally covers expenses, making it a sustainable livelihood for most farmers. However, a portion of producers still face financial gaps, underscoring the need for additional income sources to meet their financial needs fully.

**Figure 4:** Income/Expenses Comparison from Chhurpi Production (%) (N = 22)



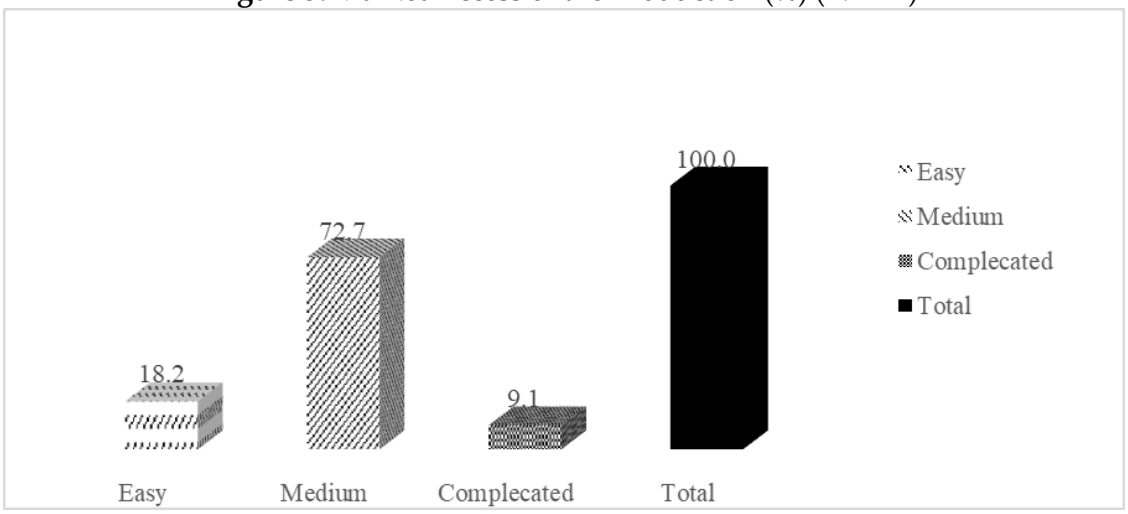

**Source:** Field visit (2024).

Figure 4 shows that 68.2 percent of respondents report that their income from chhurpi production covers their expenses, while 31.8 percent say it does not. This indicates that for the majority, chhurpi production is a sustainable livelihood, but nearly a third of respondents still face financial gaps, requiring additional income sources to meet their overall expenses.

### 6.6 Market Access of the Production

Market access of chhurpi in Kalinchowk, especially in villages like Kuri, Gairi, and Ghyang, is limited by the region's remoteness, poor transport, and weak marketing channels. While local tourism allows for some direct sales, better infrastructure and market connections could greatly boost the economic potential for chhurpi producers.

**Figure 5:** Market Access of the Production (%) (N = 22)



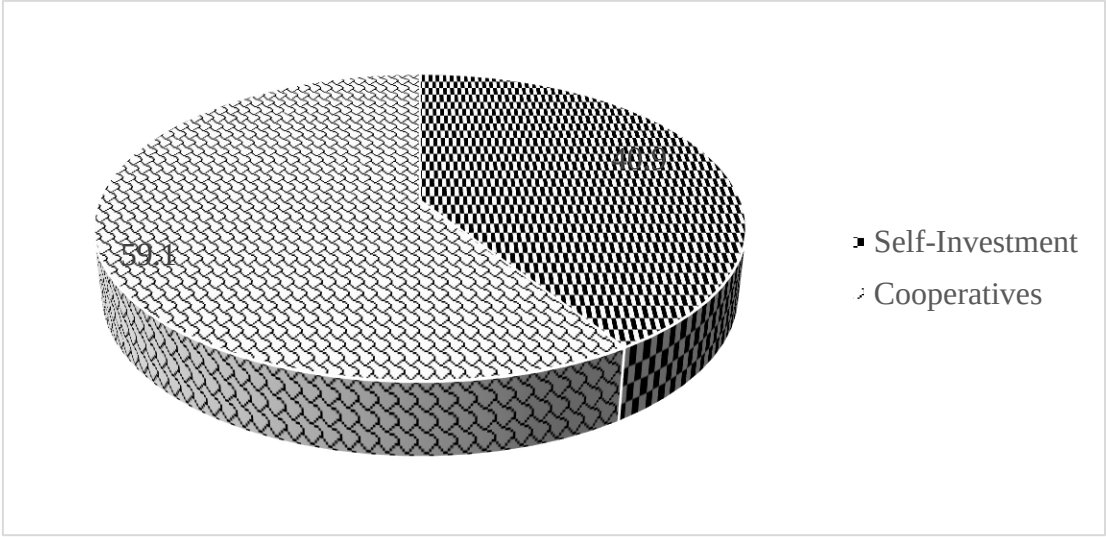

**Source:** Field visit (2024).

Figure 5 illustrates the ease of market access for chhurpi production based on responses from 22 participants. The majority, 72.7%, indicated that market access is "Medium," while 18.2% reported it as "Easy." A smaller group, 9.1%, found access "Complicated." The total responses account for 100% of the participants.

### 6.7 Raising Finances for the Production of Chhurpi

Raising finance for chhurpi production in rural areas like Kalinchowk can be challenging due to limited access to formal credit institutions and financial services. Farmers often rely on personal savings, informal loans, or local cooperatives to fund production.

**Figure 6:** Raising Finances for the Production of chhurpi (%) (N = 22)



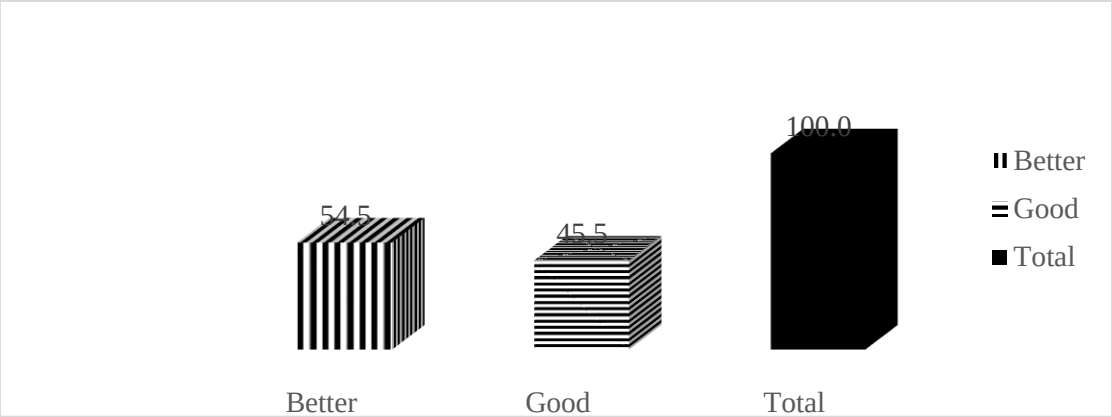

**Source:** Field visit (2024).

A significant majority of respondents, 59.1 percent financed their chhurpi production ventures through their own funds. This suggests that self-reliance is the primary strategy for funding this business. While less common, cooperatives contributed to financing chhurpi production for 40.9 percent of respondents. This indicates that cooperatives play a supporting role in providing financial resources for this industry.

### 6.8 Chhurpi Production and Financial Situation Increase

The majority of respondents reported an improvement in their financial situation after engaging in chhurpi production, while others indicated their financial status remained stable, reflecting a positive or neutral impact overall.

**Figure 7:** Chhurpi Production and Financial Situation Increase (%) (N = 22)



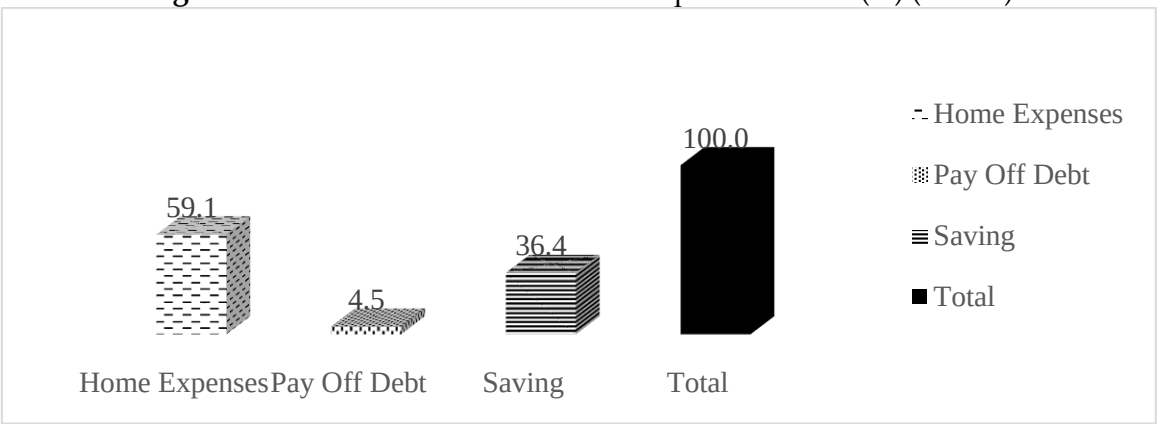

**Source:** Field visit (2024).

According to Figure 7, 54.5% of respondents reported that their financial situation improved after engaging in chhurpi production, while 45.5% indicated that their financial situation remained stable, suggesting a positive or neutral impact overall.

### 6.9 The Use of Income from Chhurpi Production

Income from chhurpi production is primarily used by farmers to meet household needs, including food, education, healthcare, and basic living expenses. Some producers invest their earnings back into expanding their chhurpi business or improving livestock and production methods.

**Figure 8:** The Use of Income from Chhurpi Production (%) (N = 22)



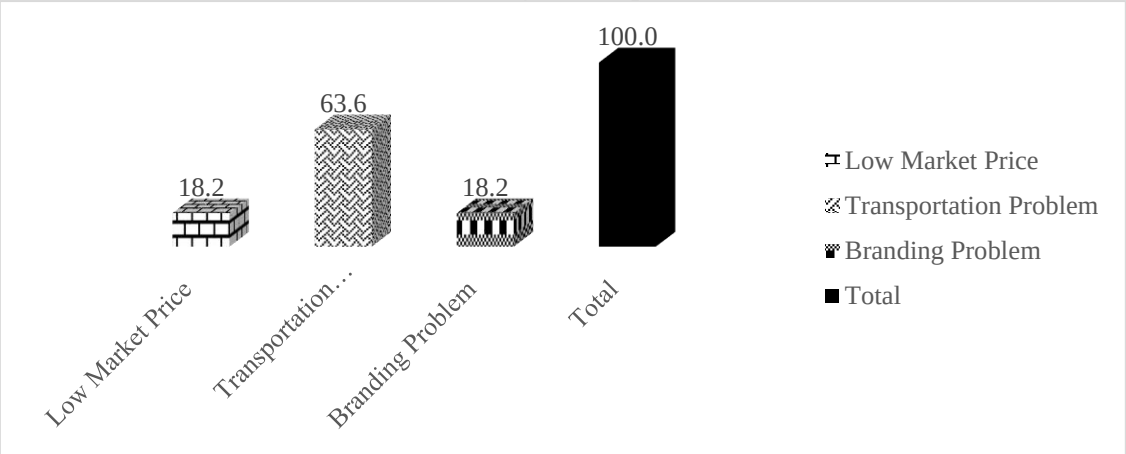

**Source:** Field visit (2024).

The largest portion of the income from chhurpi production 59.1 percent is allocated towards home expenses, indicating that the business plays a significant role in supporting household needs. A considerable portion 36.4 percent of income is used to pay off debt, suggesting that chhurpi production is a valuable tool for financial management. While less common, 4.5 percent of respondents allocate a portion of their income to savings. This indicates that some individuals are able to save for future needs or investments.

### 6.10 Problems Faced by Chhurpi Producers

Chhurpi producers face challenges such as poor infrastructure, limited market access, and lack of financial resources. Insufficient marketing channels and low awareness of chhurpi's potential further restrict sales, while seasonal production, demand fluctuations, and inadequate government support also hinder their growth, affecting rural livelihoods.

**Figure 9:** Problems Faced by Chhurpi Producers (%) (N = 22)



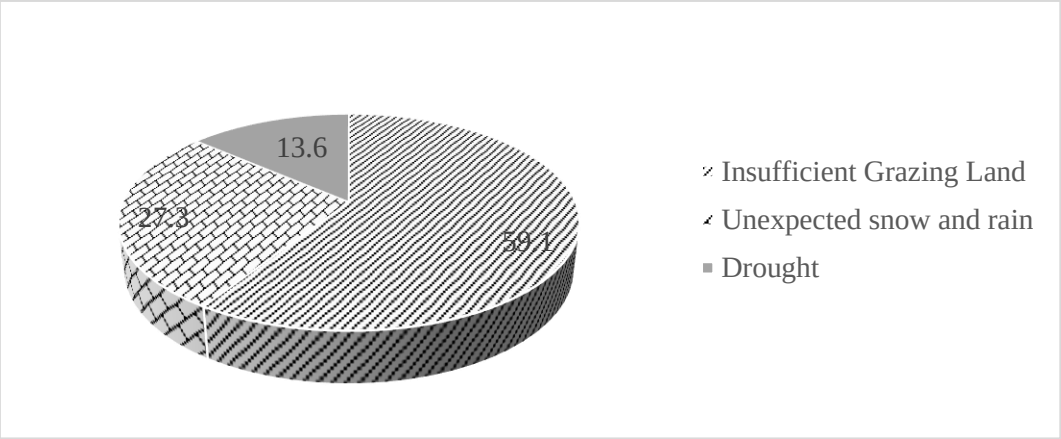

**Source:** Field visit (2024).

According to Figure 9, this is the most significant issue, with 63.6 percent of producers citing it as a major problem. It suggests that the market for chhurpi may be saturated or that there is a lack of demand for the product at current prices. 18.2 percent of producers reported difficulties with transportation. This could include issues with infrastructure, logistics, or the cost of transporting chhurpi to markets. Another 18.2 percent of producers mentioned branding as a challenge. This might involve difficulties in creating a strong brand identity, differentiating their product from competitors, or reaching their target customers effectively.

### 6.11 Environmental Challenges Faced by Chhurpi Producers

Chhurpi producers face various environmental challenges that affect their production. Harsh weather conditions in high-altitude areas like Kalinchowk make livestock rearing difficult, impacting the supply of milk, the main ingredient for Chhurpi. Climate change has led to unpredictable weather patterns, disrupting grazing cycles and water availability for livestock. Soil erosion and deforestation in the region also contribute to diminishing grazing lands. These environmental factors, combined with limited access to sustainable farming practices, make chhurpi production more difficult for rural farmers, affecting both quantity and quality.

**Figure 10:** Environmental Challenges Faced by Chhurpi Producers (%) (N = 22)



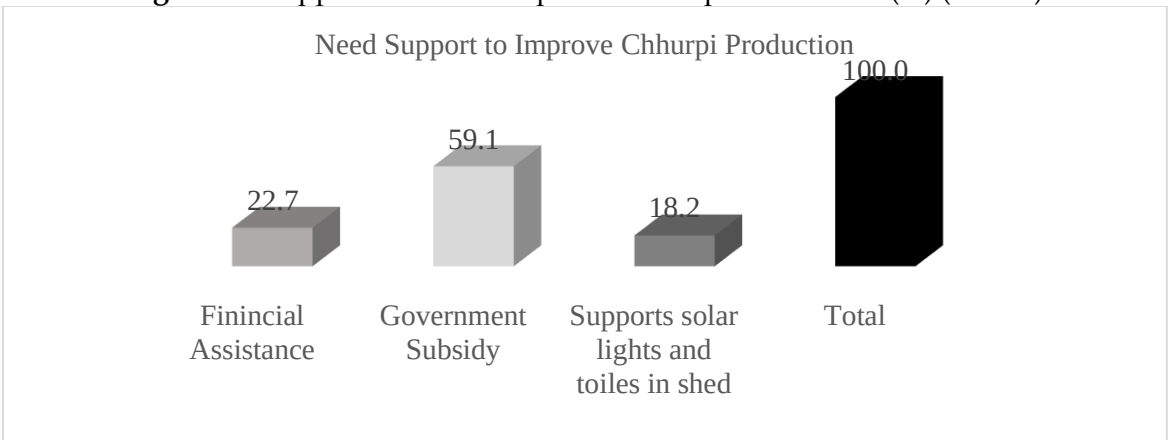

**Source:** Field visit (2024).

Based on Figure 10, the most significant issue accounted for 59.1 percent of the challenges reported. It suggests that unpredictable weather patterns, such as early or late snowfall or excessive rainfall, are disrupting chhurpi's production and grazing processes. 27.3 percent of producers cited drought as a major challenge. This could lead to insufficient water for livestock, reduced grass growth, and decreased milk production. 13.6 percent of producers mentioned a lack of grazing land as a problem. This could be due to factors such as land degradation, competition for grazing areas, or limited access to suitable pastures.

### 6.12 Support Needs to Improve Chhurpi Production

According to the data, government subsidies are the most requested form of support, with 59.1% of respondents identifying them as a crucial need. These subsidies could include support for feed, livestock, or other inputs related to chhurpi production. Additionally, 22.7% of producers indicated a need for loans, grants, or subsidies to cover production costs, purchase equipment, or invest in improvements.

**Figure 11:** Support Needs to Improve Chhurpi Production (%) (N = 22)




**Source:** Field visit (2024).

## 7. Findings

The study on the economic impact of chhurpi production reveals key findings about its role in farmers' livelihoods. Both men and women are equally involved in the production, reflecting balanced gender representation. Chhurpi production is primarily carried out by older generations, signifying its traditional roots, though younger members are increasingly participating, ensuring sustainability. While some farmers produce chhurpi on a larger scale, most engage in smaller operations, leading to varied income levels. Although not all producers earn enough to cover expenses, many supplement their income with other agricultural activities. Challenges such as transportation, unpredictable weather, and climate change affect production, with most farmers identifying government subsidies as essential for improving their operations. Despite the hardships, chhurpi production remains a long-term commercial activity, with many farmers planning to continue it, although they are reluctant to involve future generations. Women also play a vital role, and most farmers benefit from financial and technical support from the government.

## 8. Conclusion

Chhurpi production in Nepal remains a vital tradition that significantly contributes to farmers' livelihoods. While it helps improve their living standards, providing income for basic needs, it is often supplemented by the production of ghee and cheese. The industry is marked by equal gender participation, with both men and women preserving this cultural heritage. Despite challenges such as environmental threats, transportation difficulties, and declining interest from younger generations, the production remains resilient. Government support through subsidies, training, and infrastructure development is essential for ensuring the long-term sustainability and profitability of chhurpi production.

**Conflict of Interest Statement**
The researchers declare that there are no conflicts of interest associated with this study. It was conducted without any commercial and financial relationship that could be constructed as a potential conflict of interest.

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