The Journal of Musikot Multiple Campus *Volume 3 Issue 1 June 2025*
A Peer-Reviewed, Open-Access Multidisciplinary Journal
ISSN 2976-1271 (Print)
Published by the Research Management Cell
Musikot Khalanga Multiple Campus, Musikot, West Rukum
(A Constituent Campus of Mid-West University)

The Influence of Economic, Social, and Environmental Factors on Household Food Security

Kamal Kumar Khadka (PhD Scholar)
Asst. Professor, Jaljala Multiple Campus, Rolpa
ORCID: 0009-0003-8040-0492

Abstract

The aim of this study to explore the determinants of food security, focusing on the variables that influence households' access to adequate and nutritious food. A deductive strategy and descriptive and causal-comparative study design were utilized. Non-probability convenience sampling technique was utilized for data collection among 385 members of households of Rolpa District, Nepal. Descriptive analysis was utilized for assessing the central tendencies of variables based on data from Likert scale surveys with a majority base. Pearson correlation and multiple linear regression models were utilized for conceptualizing the determinants of food security. The results showed that income, employment status, access to financial services, education, gender dynamics, climate conditions, land access, and agricultural productivity all have a positive and significant impact on food security. In contrast, household size was found to have a negative and significant impact on food security. And it was also found that the independent variables explained about 73.50 percent of food security variation. This study concludes that economic, social, and environmental factors are powerful tools for bringing effective positive changes to the food security of the households. Understanding these determinants in crucial for policymakers and development practitioners working to enhance food security across different regions.

***Keywords*:** Food security, Determinants of Food Security, Multiple Linear Regression.

Introduction

According to Pinstrup-Andersen (2009), food security is the condition where all individuals have consistent access to sufficient, safe, and nutritious food to maintain an active and healthy life, supported by factors such as availability, access, utilization, and stability of food. Food security is a global issue, with the Food and Agriculture Organization (FAO) having it delineated as that situation in which everyone, at all times, has physical, social, and economic access to sufficient, safe, and quality food to meet their dietary needs for an active and healthy life. Kotze (2003) emphasized that food security is primarily concerned with the access of vulnerable households to food and the influence of political, economic, and social factors. According to FAO (1996), food security encompasses four pillars: availability, access, utilization, and stability. Food insecurity remains a significant public health issue, with its prevalence influenced by socioeconomic status and local environmental factors. The

Right to Food and Food Sovereignty Act, 2075 (2018), comprising eight chapters and 46 sections, establishes the framework for ensuring the right to food and addressing food insecurity in Nepal. It outlines various measures to safeguard the right to food and protect against hunger. Despite such legal provisions, Nepal is placed at number 68 among 127 countries with data available in the 2024 Global Hunger Index (GHI). With a GHI score of 14.7, Nepal is at a "moderate" level of hunger according to the 2024 index.

Food security, as defined by availability, accessibility, utilization, and stability of food, is influenced by a complex interplay of economic, social, and environmental factors that collectively decide upon household well-being and access to food. In recent years, these factors have gained heightened attention as global food systems face increasing pressures from climate change, economic instability, and social inequality (FAO, 2023; United Nations, 2022). Economic factors such as income levels, employment opportunities, and market prices directly affect a household's purchasing power and ability to secure sufficient, nutritious food (Burchi & De Muro, 2023). Additionally, social dimensions such as education, gender, and social capital influence food security by determining individuals' ability to make informed food choices and access support networks (Maxwell et al., 2022). Environmental factors, including climate change, biodiversity loss, and natural resource depletion, further complicate food security by reducing agricultural productivity and increasing the volatility of food prices (Rohatgi et al., 2023; FAO, 2022). The intersection of these factors varies across different regions, with developing countries often experiencing compounded vulnerabilities due to weaker economic structures, limited social protection systems, and heightened environmental challenges (Hirvonen et al., 2023). Understanding the role of these multidimensional factors is crucial in developing effective strategies for enhancing household food security, especially in the context of global crises like the COVID-19 pandemic and ongoing geopolitical conflicts (Jones et al., 2023).

Objectives of the Study

The main goal of this study was to investigate the factors affecting the food security of isolated households in Rolpa District, Lumbini Province, Nepal. The specific objectives were;

Examine the impact of economic factors (household income, employment status, access to financial services) on the food security of households, investigate the impact of social factors (household size, education, gender dynamics) on the food security of households, and to analyze the impact of environmental factors (climate conditions, land access, agricultural productivity) on the food security of households.

This study seeks to examine how economic, social, and environmental factors influence food security by examining the following research questions. What is the impact of economic factors (household income, employment status, access to financial services) on the food security of households? How do social factors (household size, education, gender dynamics) impact the food security of households? and What is the impact of environmental factors (climate conditions, land access, agricultural productivity) on the food security of households?

Literature Review

Johnston et al. (2014) have identified the determinants of sustainable diets using descriptive analysis and constructing a causal model and framework to further be explained. Five of the major determinants of sustainable diet such as agriculture, health, sociocultural, environmental, and socioeconomic were identified. Changes within one determinant category can impact others, ultimately affecting the overall sustainability of a diet. To advance this area of research, it is essential to develop improved measurements and indicators to evaluate the impact of these factors on diet sustainability, as well as to understand the trade-offs involved in recommendations aimed at enhancing food system sustainability. For instance, Smith et al. (2010) found that higher income is linked to better food security, as it enhances access to nutritious food. Other studies emphasize the significance of agricultural productivity and market access, particularly in rural areas where households depend on farming for their livelihoods. For example, Regmi et al. (2019) analyzed the factors contributing to food insecurity in Nepal using binary logistic models, focusing on food poverty, inadequate food consumption, and poor dietary diversity, based on data from the Nepal Living Standard Survey. They found that food security was strongly linked with higher education of the household head and age, higher female education, higher irrigated land with higher farm size, better market, road, and cooperative access, and better household assets and remittance income. Food insecurity was higher in rural areas where there was rain-fed agriculture reliance, higher family size, and higher dependency ratio.

Addressing physical and economic access to food, along with investments in agriculture and education, can possibly reduce food insecurity in Nepal. Similarly, Chemjong and Yadav (2020) analyzed the food security situation in Nepal, identifying several factors contributing to food insecurity, including vulnerability to natural disasters such as drought, earthquakes, floods, and landslides, as well as economic challenges like global price fluctuations, governance issues, civil unrest, disease, and inadequate infrastructure. The COVID-19 pandemic exacerbated food insecurity, particularly in disaster-prone areas of western Nepal and the Terai region. Currently, 4.6 million people in Nepal are food-insecure, with 20% mildly, 22% moderately, and 10% severely food-insecure. The issue can be managed with specific, strategic policies that focus on natural resource conservation. Additionally, Carter et al. (2012) conducted a longitudinal study to examine the impact of local social and environmental factors on household food insecurity, using data from the Québec Longitudinal Study of Child Development. The study followed children aged 4–10 years over six years, finding that food insecurity prevalence was 9.2% at age 4, with no significant changes over time. Three environmental factors were positively associated with food insecurity. The study emphasizes the role of the local social environment in addressing food insecurity and suggests that interventions at the community level should consider social dynamics and household-level factors to enhance food security.

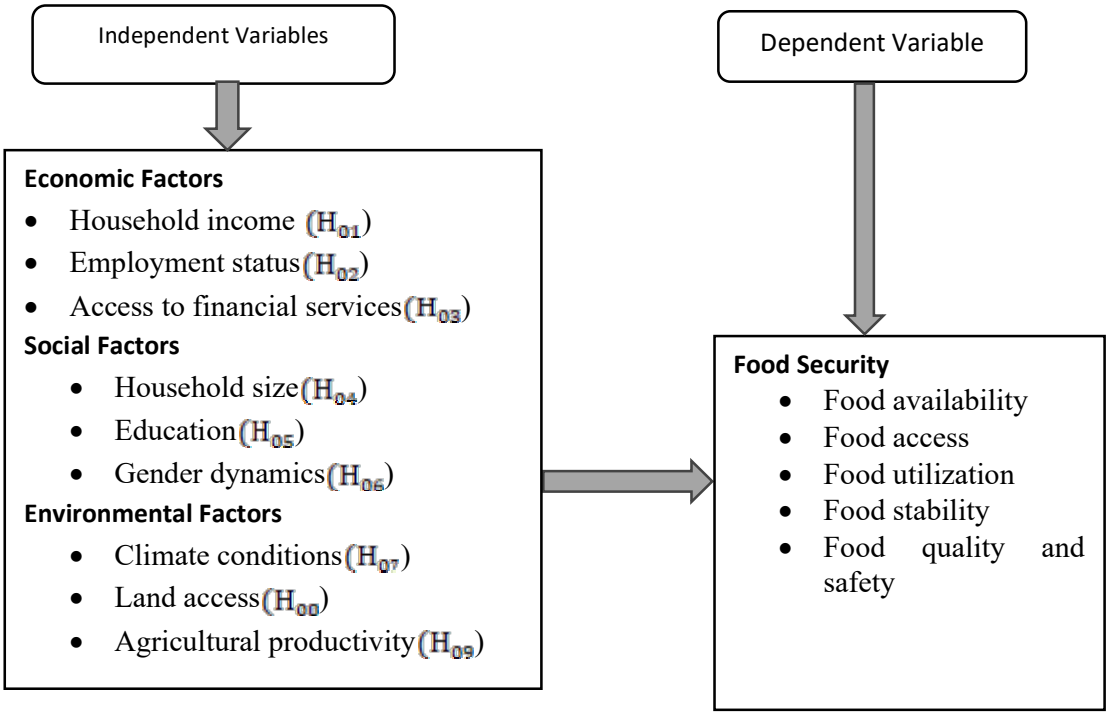
Furthermore, Hirvonen et al. (2023) examined the economic factors affecting household food security in low- and middle-income nations, focusing on income distribution, poverty, and credit access. Their findings show that higher income and employment play a

crucial role in reducing food insecurity by enhancing purchasing power, whereas economic inequality worsens food insecurity. Additionally, economic disruptions like inflation and unemployment can increase food insecurity, even among households that were previously financially stable. Similarly, Maxwell et al. (2022) investigated the social factors influencing food security, focusing on education, gender, and social capital. Their research reveals that households with higher levels of education and greater access to nutrition-related knowledge are less prone to food insecurity. The study also emphasizes the impact of gender, noting that women in many areas are more vulnerable to food insecurity. Furthermore, the importance of social networks such as community resources and support systems are highlighted as a key factor in mitigating food insecurity. For example, Rohatgi et al. (2023) explored the impact of environmental factors, especially climate change, on food security by influencing agricultural productivity, food availability, and prices. Their findings show that extreme weather events, like floods and droughts, disproportionately affect rural households reliant on rain-fed agriculture. Climate-driven environmental changes intensify food insecurity in developing areas, making it harder for households to grow or afford nutritious food.

Additionally, Haug et al. (2022) studied food security in both urban and rural areas, noting that although both face challenges, rural households are more vulnerable due to factors like limited market access, lower incomes, and greater reliance on subsistence farming. In contrast, urban households tend to struggle with high food prices, lack of affordable housing, and dependence on the market for food. The study highlights that economic, social, and environmental vulnerabilities vary depending on geographic location. Furthermore, Burchi et al. (2023) examined how agricultural productivity and market access influence food security. Their findings suggest that enhancing agricultural practices and improving market infrastructure can significantly alleviate food insecurity by increasing food supply and reducing prices. The study also emphasizes that smallholder farmers, who frequently lack access to markets and resources, are especially at risk of food insecurity, particularly in rural areas with low agricultural productivity.

Based on a detailed review of several theoretical, conceptual, and pertinent findings achieved through an extensive literature survey, this conceptual framework has been formulated to direct the study systematically and objectively.

Figure 1: Conceptual framework of the study



Source: (Maxwell et al., 2022: Hirvonen et al., 2023: Rohatgi et al., 2023)

Working Hypothesis

The research hypothesis is a measurable and specific suggestion putting forward an explanation for an occurrence, guiding experiments, data collection, and conclusion. The hypotheses formulated for this study are:

H_{01}: Household income has no significant impact on the food security of households.

H_{02}: Employment status has no significant impact on the food security of households.

H_{03}: Access to financial services has no significant impact on the food security of households.

H_{04}: Household size has no significant impact on the food security of households.

H_{05}: Education has no significant impact on the food security of households.

H_{06}: Gender dynamics has no significant impact on the food security of households

H_{07}: Climate conditions have no significant impact on the food security of households.

H_{08}: Land access has no significant impact on the food security of households.

H_{09}: Agricultural productivity has no significant impact on the food security of households.

Methodology

With the aim of obtaining the optimum results of the study, descriptive study design was used to describe the relationship between the independent and dependent variables. The study utilized a 5-point Likert scale data from a household survey conducted in Rolpa district in 2024 which recorded data on both independent and dependent variables. The dependent variable is food security while independent variables include household income, employment status, access to financial services, education, household size, gender dynamics, climate conditions, land access, and agricultural productivity. Since the exact number of populations in household were unknown, it was assumed that p=0.50 (maximum variability). Likewise, it was also supposed that a desired 95% confidence level and ±5% error level. Therefore, the formula used to calculate sample size is applied by Cochran (1963). $n = \frac{z^2pq}{e^2} = \frac{0.95^2*0.50*0.50)}{0.05^2} =$ 384.16 respondents. As the minimum sample size needed for this study is 385, the primary data was collected by employing a self-administrated questionnaire with convenience and judgmental non-probability sampling technique and the sample consists of rural and urban households. Where, n = Sample size; $e2$ = error level, z = confident level, p = estimated proportion of an attribute, q=1-p. Data collection was on multiple channels, i.e., field survey, e-mail, google form, and Facebook messenger. Data analysis entailed the employment of descriptive statistics, inferential statistics, regression models to assess the strength and significance of correlation between independent variables and food security outcomes with the help of statistical package for the social sciences (SPSS, Version 26.0) and MS Excel. For this, Linear multiple regression was used in an effort to define and explain the relationship between the independent and dependent variables. The applied linear regression model as; $Y=\beta0+ \beta1X1+\beta2X2+\beta3X3+\beta4X4+\beta5X5+\beta6X6+\beta7X7+\beta8X8+\beta9X9+\varepsilon$. Where: - Y – Food security (Dependent variable); β0 – Constant (value of Y when Xi=0); X1 – Household income; X2 – Employment status; X3 – access to financial services; X4 – Education; X5 – Household size; X6 – Gender dynamics; X7 – Climate conditions; X8 – land access; X9 – Agriculture productivity; Bi – Regression coefficients (change in Y with respect to a unit change in Xi); and ε – Error term.

Results

Cronbach's Alpha Analysis

Cronbach's alpha gives a simple way to measure the reliability of a score. It is used on the basis that more than one item is measuring a single underlying construct. The coefficient of reliability will usually be between 0 and 1, with higher values showing higher internal consistency and reliability of the items in the scale. The following table shows the Cronbach's alpha values and the number of items covered in this survey.

Table 1: Cronbach's Alpha Analysis

Variables	No. of Items	Cronbach's Alpha
Household Income	4	0.756
Employment Status	4	0.772

Access to Financial Services	4	0.748
Household Size	4	0.823
Education	4	0.791
Gender Dynamics	4	0.814
Climate Conditions	4	0.785
Land Access	4	0.843
Agricultural Productivity	4	0.766
Food Security	15	0.832

Note. Survey Questionnaire (2024)

The Cronbach's Alpha values for all constructs (household income, employment status, access to financial services, household size, education, gender dynamics, climate conditions, land access, and agricultural productivity) exceed the standard threshold, indicating good reliability (above 0.70). Thus, the instrument is considered reliable for measuring the intended constructs.

Descriptive Statistics

Descriptive statistics is a field within statistics that focuses on summarizing and organizing data to deliver a clear and concise overview of its key features. This includes metrics such as range, mean, and standard deviation, which characterize the central tendency, variability, and overall distribution of the data. By outlining the fundamental characteristics of a dataset, descriptive statistics facilitate the identification of patterns, trends, and anomalies without making broader inferences about a larger population.

Table 1: Economic Factors (N=385)

Household Income	Min	Max	Mean	S.D
My household income is sufficient to meet our basic needs (e.g., food, housing, healthcare)	1	5	1.16	0.84
I feel secure about my household's financial situation	1	5	1.33	1.02
I can afford to save money for future needs or emergencies	1	5	1.21	0.91
My household income allows us to participate in social activities without financial strain	1	5	1.12	0.73
Average			1.21	0.88
Employment Status				
I am unsatisfied with my current employment situation	1	5	3.32	0.99
I believe my job provides me with opportunities for growth and advancement	1	5	3.23	0.82
I feel that my employment status positively impacts my overall well-being	1	5	4.11	0.51
I often worry about job security and its effects on my household	1	5	4.46	0.32
Average			3.78	0.66
Access to Financial Services				

I have easy access to banking services (e.g., checking and savings accounts)	1	5	3.35	1.03
I feel comfortable seeking financial advice or services when needed	1	5	3.43	1.11
I believe that financial services in my community are adequate to meet my needs	1	5	2.96	1.18
I am aware of financial literacy programs available in my community	1	5	2.94	0.86
Average			3.17	1.05
Overall Average			2.72	0.86

The respondents were required to respond to a series of statements that were meant to extract their degree of conditions on certain economic aspects like household income, labor force status, and access to finance. The results (Mean = 1.21, SD = 0.88) indicate that the respondents disagreed with the different statements suggesting that the respondents had an unfavorable argument towards the various household income aspects. Similarly, the results (Mean = 3.78, SD = 0.66) indicate that the respondents agreed with the different statements suggesting that the respondents were positively argumentative towards different employment status factors. Similarly, the results (Mean = 3.17, SD = 1.05) indicate that the respondents agreed with the different statements suggesting that the respondents were positively argumentative towards different financial services access factors. Finally, overall, the summation score of the responses was utilized to measure the households' level of economic factors. the results (Mean = 2.72, SD = 0.86) indicate that the respondents neither agreed nor disagreed with the different statements suggesting that the respondents had a moderate level of argument on different factors. This is supported by mean scores that fell between 1.12 and 4.46.

Table 2: Social Factors (N=385)

Household Size	Min	Max	Mean	S.D.
My household size negatively affects our financial stability	1	5	4.25	0.42
Living in a larger household do not enhance my sense of community and support	1	5	4.12	0.62
I feel that managing a larger household is challenging	1	5	3.45	1.06
I believe that household size influences the availability of resources (e.g., food, space)	1	5	3.66	1.03
Average			3.87	0.78
Education				
My educational value as an important factor for improving my quality of life	1	5	4.36	0.52
I feel that my educational background provides me with opportunities for better employment	1	5	3.30	0.80
I believe that access to education should be equitable for all members of my community	1	5	4.12	0.48
I have less knowledge about the impact of food waste on	1	5	3.04	1.09

food security.				
Average			3.71	0.72
Gender Dynamics				
I believe that gender roles within my household are balanced	1	5	3.08	1.10
I feel that my gender positively influences my access to opportunities (e.g., education, employment)	1	5	3.29	1.14
I believe that both genders should have equal responsibilities in household decision-making	1	5	4.05	0.77
I feel comfortable discussing gender dynamics within my community	1	5	3.01	1.21
Average			3.36	1.06
Overall Average			3.64	0.85

The respondents were required to respond to a set of statements which were attempting to capture their level of conditions on social factors like household size, education, and gender relationships. The results (Mean = 3.87, SD = 0.78) show that the respondents concurred with different statements which indicate that the respondents possessed a strong argument on dimensions of different household sizes. Similarly, the results (Mean = 3.71, SD = 0.72) support that the respondents concurred with the different statements implying that the respondents had a positive argument towards different education fields. Similarly, the results (Mean = 3.36, SD = 1.06) support that the respondents concurred with the different statements implying that the respondents had a positive argument towards different gender dynamics fields. Finally, overall, the summated score of the responses was utilized to measure the magnitude of the economic factors by the households. the results (Mean = 3.64, SD = 0.85) show that the participants agreed with the different statements, which indicate that the participants agreed that there was a strong argument regarding different social issues. This is confirmed by mean scores of 3.1 to 4.36.

Table 3: Environmental Factors (N=385)

Climate Conditions	Min	Max	Mean	S.D.
I believe that current climate conditions positively affect agricultural practices in my area	1	5	2.79	1.05
I am concerned about extreme weather events (e.g., droughts, floods) affecting my livelihood	1	5	3.18	1.02
Seasonal changes in climate impact my ability to grow crops effectively	1	5	3.21	0.94
I feel informed about how climate change may affect my community's environment	1	5	2.97	0.87
Average			3.04	0.97
Land Access				
I have secure access to land for agricultural use	1	5	4.07	0.69
I believe that land tenure policies in my area support sustainable farming practices	1	5	1.83	1.08
I face challenges related to land access that affect my	1	5	2.52	0.89

agricultural activities				
I feel that my community has adequate resources to address land access issues	1	5	1.63	0.74
Average			2.51	0.85
Agricultural Productivity				
I believe that my agricultural productivity has improved over the past few years	1	5	1.89	1.04
I have access to the necessary tools and resources to maximize my agricultural output	1	5	1.78	0.87
I am satisfied with the support available for improving agricultural practices in my community	1	5	1.36	1.01
I feel that agricultural extension services in my area effectively promote sustainable practices	1	5	1.05	0.56
Average			1.52	0.87
Overall Average			2.36	0.90

The respondents were required to respond to a series of statements that sought to draw out their level of conditions on some of the environmental aspects like climatic conditions, access to land, and farm productivity. The results (Mean = 3.04, SD = 0.97) indicate that the respondents agreed with the different statements suggesting that the respondents presented a positive case to the various climate conditions aspects. Similarly, the results (Mean = 2.51, SD = 0.85) indicate that the respondents neither agreed nor disagreed with the different statements suggesting that the respondents had an average argument towards the different land access aspects. Furthermore, the results (Mean = 1.52, SD = 0.87) indicate that the respondents disagreed with the different statements suggesting that the respondents had a negative argument towards the different agricultural productivity aspects. Finally, overall, the total score of the responses was used in order to measure the households' level of environmental factors. the results (Mean = 2.36, SD = 0.90) indicate that the respondents neither agreed nor disagreed with the different statements suggesting that the respondents had an average argument towards the different environmental dimensions. This is supported by mean scores that range from 1.01 to 4.07.

Table 4: Food Security (N=385)

Food Availability	Min	Max	Mean	S.D.
I believe that food is readily available in my community	1	5	3.05	1.06
There is a sufficient supply of food produced locally to meet the needs of the population	1	5	1.22	0.60
I can find a variety of food options in local markets and stores	1	5	1.76	0.54
Average			2.01	0.73
Food Access				
My household has enough income to afford the food we need	1	5	1.85	0.66
Transportation is not a barrier for me in accessing food sources	1	5	2.81	0.93
I can easily access food assistance programs if needed	1	5	1.63	0.88

Average			2.10	0.82
Food Utilization				
I believe that I have the knowledge and skills to prepare healthy meals	1	5	1.76	0.95
My household consumes a balanced diet that meets our nutritional needs	1	5	1.62	0.76
Food preparation practices in my household ensure safety and hygiene	1	5	1.70	0.81
Average			1.69	0.84
Food Stability				
I feel confident that my household will have enough food in the coming months	1	5	2.91	1.05
Seasonal changes do not significantly affect my household's food supply	1	5	1.54	0.78
I have not experienced significant disruptions in my food supply due to external factors (e.g., economic downturns, natural disasters)	1	5	2.67	1.01
Average			2.37	0.95
Food Quality and Safety				
I believe that the food I purchase is safe to eat	1	5	1.35	0.98
The food available to me meets my quality standards (e.g., freshness, nutritional value)	1	5	1.90	0.53
I am aware of food safety practices that can prevent foodborne illnesses	1	5	1.79	1.10
Average			1.68	0.87
Overall Average			1.97	0.84

The respondents were required to respond to a series of statements that were designed to draw out their conditions on various dimensions of food security including food availability, food access, food utilization, food stability, and food quality and safety. The findings (Mean = 2.01, SD = 0.73) indicate that the respondents neither agreed nor disagreed with the different statements suggesting that the respondents had an average argument towards different dimensions of food availability. Similarly, the findings (Mean = 2.10, SD = 0.82) indicate that the respondents neither agreed nor disagreed with the different statements suggesting that the respondents had an average argument towards different dimensions of food access. In addition, the results (Mean = 1.69, SD = 0.84) indicate that the respondents disagreed with the different statements suggesting that the respondents presented a negative argument regarding different food utilization factors. Further, the results (Mean = 2.37, SD = 0.95) indicate that the respondents neither agreed nor disagreed with the different statements suggesting that the respondents presented an average argument regarding different food stability factors. And, the results (Mean = 1.68, SD = 0.87) indicate that the respondents rejected the different statements suggesting that the respondents were in disagreement with different food quality and safety aspects. Finally, in general, the combined score of the responses was used to gauge the degree of food security factors for the households. The

results (Mean = 1.97, SD = 0.84) indicate that the respondents disagreed with the different statements as an indicator that the respondents held a negative argument with respect to different food security indicators. This is supported by mean scores ranging from 1.22 to 3.05.

Regression Analysis: Regression analysis is a statistical method used to examine and model the relationship between an independent variable and one or more independent variables. It attempts to define the impact of variations in the independent variables on the dependent variable, allowing for prediction and insight into data trend. It is applied in various fields including economics, management, social sciences, and health research for decision-making purposes and data examination.

$Y=\beta0+\beta1X1+\beta2X2+\beta3X3+\beta4X4+\beta5X5+\beta6X6+\beta7X7+\beta8X8+\beta9X9+\varepsilon$……Model I

Table 5: Regression Model Summary and Analysis of Variance

R	R Square	Adjusted R Square	F	Sig.
.832[a]	.735	.729	102.731	.000[b]

Dependent Variable: Food Security (FS)

Predictors: (Constant), Household income, employment status, financial services' access, household size, education, gender dynamics, climate conditions, land access, agricultural productivity.

The regression model demonstrates a strong relationship between the predictors and food security, as indicated by an R value of 0.832, suggesting a robust correlation. The R Square value of 0.735 means that approximately 73.5% of the variance in food security can be explained by the model's predictors, which include household income, employment status, access to financial services, household size, education, gender dynamics, climate conditions, land access, and agricultural productivity. The Adjusted R Square of 0.729 indicates that the model effectively accounts for the number of predictors used, with minimal loss in explanatory power. The F-statistic of 102.731, along with the significance value (p-value) of 0.000, clearly points to the fact that the overall model is highly statistically significant, affirming the significance of such factors in deciding food security outcomes.

Table 6: Regression Coefficients and VIF test

Model	Unstandardized Coefficients		Standardized Coefficients			
	B	Std. Error	Beta	T	Sig.	VIF
(Constant)	0.631	0.134		4.716	0.000	
Household Income	0.321	0.081	0.216	3.946	0.000	1.618
Employment Status	0.261	0.076	0.320	3.454	0.000	1.988
Financial Services' Access	0.076	0.059	0.241	4.770	0.160	2.058
Household Size	-0.185	0.044	-0.187	-2.468	0.004	1.478
Education	0.117	0.069	0.492	2.547	0.002	2.081
Gender Dynamics	0.063	0.055	0.183	1.685	0.320	1.231
Climate Conditions	0.134	0.038	0.274	4.822	0.000	1.320

Land Access	0.108	0.066	0.356	3.343	0.011	2.022
Agricultural Productivity	0.215	0.071	0.452	2.854	0.000	1.745

a. Dependent Variable: Food Security (FS)

The results indicate that an increase of one unit in household income, employment status, access to financial services, household size, education, gender dynamics, climate conditions, land access, and agricultural productivity correlates with changes in food security by 0.321, 0.261, 0.076, -0.185, 0.117, 0.063, 0.134, 0.108, and 0.215, respectively. There is a statistically significant positive impact of household income, employment status, education, gender dynamics, climate conditions, land access, and agricultural productivity on food security. Conversely, while access to financial services has a positive but statistically insignificant influence, household size shows a significant negative effect on food security. Additionally, the individual VIF values confirm that there are no significant multicollinearity issues among the independent variables.

Table 7: Hypothesis Testing Summary

Hypothesis Statement	Sig.	Decision
H_{01} Household income has no significant impact on the food security of households.	0.000	Rejected
H_{02} Employment status has no significant impact on the food security of households.	0.000	Rejected
H_{03} Access to financial services has no significant impact on the food security of households.	0.160	Accepted
H_{04} Household size has no significant impact on the food security of households	0.004	Rejected
H_{05} Education has no significant impact on the food security of households.	0.002	Rejected
H_{06} Gender dynamics has no significant impact on the food security of households	0.320	Accepted
H_{07} Climate conditions have no significant impact on the food security of households.	0.000	Rejected
H_{08} Land access has no significant impact on the food security of households.	0.011	Rejected
H_{09} Agricultural productivity has no significant impact on the food security of households.	0.000	Rejected

Discussion

This study highlights the complex nature of food security in Rolpa District, Nepal, showing that economic, social, and environmental factors such as income, employment, education, gender roles, climate, land access, and agricultural output positively influence food security. Although access to financial services had a positive but insignificant effect, it signals an area needing further attention. In contrast, larger household size negatively impacted food security, suggesting the need for focused interventions. Overall, the findings

emphasize that a comprehensive approach addressing these key factors is crucial for enhancing food security in the region.

Conclusion

This study offers important insights into the primary factors influencing food security, highlighting the significance of economic, social, and environmental elements. It concludes that these factors effectively enhance food security. Specifically, in Rolpa District, Nepal, household income, employment status, education, gender dynamics, climate conditions, land access, and agricultural productivity were found to have a statistically significant and positive influence on food security. Conversely, access to financial services showed a statistically insignificant yet positive effect on food security. Additionally, household size was found to have a statistically significant and negative impact. Overall, the study confirms that economic, social, and environmental factors significantly contribute to food security in the region.

This study contributes to an understanding of the economic, social, and environmental determinants of the food security of Nepalese households, contributing to the literature. The research offers several important implications at the theoretical, practical, and methodological levels. Future interventions should adopt a holistic approach to addressing these determinants, strengthening resilience to short-term shocks. Moreover, further research is needed to investigate region-specific factors that may influence food security dynamics, providing a more nuanced understanding of local challenges and opportunities.

References

Burchi, F., & De Muro, P. (2023). The role of economic factors in food security: A review of recent literature. Food Security, 15(2), 113-130.

Carter, M. A., Dubois, L., Tremblay, M. S., & Taljaard, M. (2012). Local social environmental factors are associated with household food insecurity in a longitudinal study of children. BMC public health, 12, 1-11. http://www.biomedcentral.com/1471-2458/12/1038

Chemjong, B., & Yadav, K. C. (2020). Food security in Nepal: a review. Rupantaran: A Multidisciplinary Journal, 4(1), 31-43. https://doi.org/10.3126/rupantaran.v4i1.34015

FAO. (1996). The Rome declaration on world food security. Population Development Review, 22, 807–809.

FAO. (2022). The State of Food Security and Nutrition in the World. FAO.

Haug, L., et al. (2022). Urban vs. rural food insecurity: A comparative study of economic, social, and environmental factors. Urban Agriculture & Regional Development, 47, 123-138.

Hirvonen, K., et al. (2023). Economic determinants of food security in low- and middle-income countries. Global Food Security, 29(6), 260-276.

Johnston, J. L., Fanzo, J. C., & Cogill, B. (2014). Understanding sustainable diets: a descriptive analysis of the determinants and processes that influence diets and their impact on health, food security, and environmental sustainability. Advances in nutrition, 5(4), 418-429. https://doi.org/10.3945/an.113.005553

Jones, A. D., et al. (2023). The socio-economic determinants of food security: Lessons from COVID-19. Global Food Security, 29, 100556. http://dx.doi.org/10.1016/j.gfs.2017.02.003

Kotze, D. A. (2003). Role of women in the household economy, food production and food security: Policy guidelines. Outlook on Agriculture, 32(2), 111-121. https://doi.org/10.5367/000000003101294352

Maxwell, D., et al. (2022). The role of social factors in household food security: A critical review. Food Security, 14(5), 935-951.

Pinstrup-Andersen, P. (2009). Food security: definition and measurement. Food security, 1, 5-7. https://doi.org/10.1007/s12571-008-0002-y

Regmi, H. R., Rijal, K., Joshi, G. R., Sapkota, R. P., & Thapa, S. (2019). Factors influencing food insecurity in Nepal. Journal of Institute of Science and Technology, 24(2), 22-29. Doi: http://doi.org/10.3126/jist.v24i2.27253

Rohatgi, A., et al. (2023). The impact of environmental changes on food security in rural communities. Environmental Research Letters, 18(4), 452-464.

Smith, L. C., & Frankenberger, T. R. (2018). Does resilience capacity reduce the negative impact of shocks on household food security? Evidence from the 2014 floods in Northern Bangladesh. World Development, 102, 358-376. https://doi.org/10.1016/j.worlddev.2017.07.003