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Ky Nguyen Dinh [1]
Hung Luu Manh: [2]

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Ky Nguyen Dinh [1] Hung Luu Manh: [2]

Bich Nguyen Thi Ngoc, My Nguyen Thi Thanh, Anh Vu Phan Thuy, An Hoang Vu, Vy Nguyen Tran Thuy

kynd@hcmue.edu.vn; hunglm@hcmue.edu.vn, bichntngoc@hcmue.edu.vn, 4701612046@student.hcmue.edu.vn, anhoang.lifeskills@gmail.com, nguyentranthuyvyy@gmail.com, vpthuyanh0206@gmail.com

Department of Psychology, Ho Chi Minh University of Education, Vietnam.

ABSTRACT

Research on the livelihood security of ethnic minorities in Gia Lai province has been limited. This article aims to investigate the livelihood security of ethnic minorities in the region, focusing on aspects such as food and nutritional security, economic security, ecological security, social security, psychological security, and physical security. Data was collected from 207 ethnic minority households in K'Bang district, Gia Lai province, Vietnam. The findings indicate that food and nutrition security, psychological well-being, and physical infrastructure are satisfactory, while economic development and the local ecosystem are rated poorly.

Keyword: **livelihood security, ethnic minorities**

1. Introduction

Livelihood security encompasses income, employment, and a network of interconnected "assets" (Aisa O. Manlosa et al., 2019). Sustainable livelihoods entail the ability to withstand and recover from challenges and disruptions, while also preserving or improving resources for the future. (Kandji, Serigne T., et al., 2006).

A study conducted by Aisa O. Manlosa et al. (2017) in rural Southwestern Ethiopia found that the livelihood strategies of farming households are closely tied to their capital assets, which significantly affect household food security. Farming practices in these regions are mainly traditional, relying on manual labor and draft animals. The study revealed limited access to credit, prompting some households to resort to informal sources like borrowing coffee or cash from neighbors, friends, or relatives to address financial difficulties.

The study conducted by Shanta Paudel Khatiwada and colleagues in 2017 emphasized the importance of various factors in the adoption of profitable livelihood strategies for poverty

alleviation in rural areas of Central Nepal. These factors include education, training, land ownership, access to credit, proximity to roads and market centers, as well as the agro-ecological location.

In 2018, Zhifel Liu and his team published a study on "The impact of livelihood sources on the livelihood strategies of farming households in the western mountainous region of China." The study highlighted that natural capital and physical capital have contrasting effects on the selection of semi-agricultural and non-agricultural livelihood strategies. It was found that higher values of the natural capital and physical capital index are associated with an increased likelihood of households choosing an agricultural strategy.

Another study conducted by Nani Maiya Sujakhu and colleagues in 2018, titled "Factors influencing the vulnerability of farming households' livelihoods in the highlands of Asia," revealed that households in the research area primarily rely on agriculture, particularly crop and livestock farming. The key factors contributing to their vulnerability include the education level of the household head, the amount of arable land available, and income generated from non-agricultural livelihood activities and technology utilization.

In the study, "Livelihood Transformation among Local Ethnic Minorities in the West Central Coast Region - Current Situation and Raised Issues" by Nong Bang Nguyen (2020), the author recognizes the positive impact of new conditions on the livelihood transformation of ethnic minorities in the region. However, despite some progress, the lives of ethnic minorities remain impoverished due to slow, challenging, and complex transformation processes. The author suggests various implementation solutions to enhance and sustainably develop livelihoods for ethnic minorities in the area.

In "*Developing Sustainable Livelihoods for Ethnic Minorities in Kon Plong District, Kon Tum Province*" by Le Tan Hien (2017), the study aims to assess the current status of livelihood activities and access to resources among ethnic minorities in Kon Tum province. The author evaluates the successes, limitations, and underlying causes of these limitations, providing specific solutions to improve and sustainably develop livelihoods for ethnic minorities in Kon Plong district.

In their study "The Limits of Livelihood Diversification and Sustainable Household Well-being: Evidence from China" (2022), Wenjia Peng and colleagues investigate the correlation between livelihood diversification and household well-being in China. The authors stress the significance of customized policies and management strategies to foster sustainable livelihoods, taking into account households' engagement in market-based activities.

In "Improving Rural Livelihoods within the Context of Sustainable Development" by Kwaku Aduse-Poku and colleagues (2003), the authors underscore the influence of resource availability on livelihoods in diverse communities, underscoring the necessity for tailored approaches to bolster sustainable development.

Hypothesis

There is a correlation between ecological security, economic security, and the livelihoods of ethnic minorities in Gia Lai Province.

2. Method

2.1. Data and sample

Table 1: Demographic characteristics of ethnic minorities in Gia Lai province (N=207)

Criteria	Classification	N (%
Sex/Gender	Male	108 (52.8%)
	Female	99 (47.8%)
Age	<18 years old	20 (9.7%)
	18-30 years old	76 (36.7%)
	30-40 years old	58 (28.0%)
	40-50 years old	35(19.5%)
	>50 years old	18 (8.7%)
Total Income	< 1 million VND	147 (71.0%)
	1-3 million VND	50 (24,2)
	3-5 million VND	7(3.4%)
	5-7 million VND	0 (0.0%)
	> 7 million VND	3(1.4%)
Educational Level	Illitrate	46 (22,2)
	Primary School	85 (41,1)
	Secondary School	44 (21,3)
	High School	26(12.6%)
	Vocational School	3 (1.4%)
	College/University	3 (1.4%)
Religion	Protestant	2(1.0%)
	Buddhism	2(1.0%)
	Hoa Hao Buddhism	1(0/5%)
	None	202 (96.7%)

This study analyzed data from 207 participants in Gia Lai province, Vietnam. Participants were informed about the voluntary nature of participation and assured of the confidentiality of their personal information. The gender distribution was 108 females (52.2%) and 99 males (47.8%). In terms of age, there were 20 participants aged 18 (9.7%), 76 aged between 18 and 30 (36.7%), 58 aged between 30 and 40 (28.0%), 35 aged between 40 and 50 (19.5%), and 18 aged over 50 (8.7%). Regarding income, 147 participants (71.0%) had income under 1 million VND, 50 (24.2%) had income between 1 million and 3 million, 7 (3.4%) had income between 3 million and 5 million, and 3 (1.4%) had income over 7 million. Education levels included 46 (22.2%) illiterate, 85 (41.1%) completed primary school, 44 (21.3%) completed secondary school, 26 (12.6%) completed high school, 3 (1.4%) completed vocational courses, and 3 (1.4%) completed college or university. In terms of religion, 2 (1.0%) were Protestants, 2 (1.0%) were Buddhists, 1 (0.5%) identified as peaceful, and 202 (96.7%) were non-religious..

2.2. Measurement

2.2.1. Food and nutritional security

This study examined food and nutritional security, including factors such as consistent food availability throughout the year, access to nutritious food for the family, affordability of balanced meals, insufficient food quantity, reliance on the public distribution system for food grains, diverse farming systems providing a variety of food options, and access to a well-rounded diet. The research showed high internal consistency with a Cronbach's alpha of 0.91. Participants rated their responses on a 5-point Likert scale from 1 (to a very great extent) to 5 (to a very small extent). (Lucas A. Garibaldi et al., 2016; N.V. Shwetha and Y.N. Shivalingaiah, 2019)

2.2.2. Economic security

In a study by N.V. Shwetha and Y.N. Shivalingaiah (2019), economic security was assessed based on twelve farming practices. These practices included optimizing resource use, increasing farm productivity and income, diversifying farming activities, reducing production costs, utilizing land efficiently, improving benefit-cost ratio, managing risks, ensuring income stability, promoting savings, generating income through marketing, and reducing stress through livestock rearing. The assessment utilized a Likert-type scale and demonstrated high reliability with a Cronbach's alpha score of 0.91.

2.2.3. Ecological security

Ecological security was assessed using five criteria (N.V. Shwetha and Y.N. Shivalingaiah, 2019): promoting farming diversification to improve water use efficiency, encouraging recycling of farm waste through diversified farming systems, decreasing susceptibility to adverse climatic conditions with diversified farming practices, fostering synergistic interactions among farm components in various farming systems, and maintaining soil fertility and health. Respondents indicated their agreement on a Likert-type scale. The Cronbach's alpha for the ecological security scale was 0.781..

2.2.4. Social security

The social security measurement in this study utilized a scale developed by authors, N.V. Shwetha and Y.N. Shivalingaiah (2019). The scale includes items such as:

- ✧ Practicing various farming systems enhances recognition in society
- ✧ Adopting diversified farming strengthens connections with extension agencies like DOA and DOH
- ✧ Diversified farming promotes cosmopolitanism among farmers
- ✧ Diversified farming provides year-round employment for farm family members
- ✧ Diversified farming integrates all land-based activities.

The scale demonstrated a high reliability with a Cronbach's alpha of 0.827.

2.2.5. Psychological security

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The Psychological Security Scale, developed by N.V. Shwetha and Y.N. Shivalingaiah in 2019, consists of the following items:

1. Engaging in diversified farming enhances my knowledge and skills.
2. Experience in diversified farming increases my confidence to experiment with new ideas.
3. Diversified farming improves my confidence in social interactions.
4. Farmers seek advice from me because of my success in diversified farming.
5. I am a leader in the community due to my practice of diversified farming.
6. I derive greater satisfaction from diversified farming systems.

The scale demonstrates high reliability with a Cronbach's alpha of 0.916.

2.2.6. Physical security

The study analyzed various physical security measures, such as owning a diversified farm to increase the likelihood of acquiring a new house, possessing land for social status, owning farm machinery for security, and having a bore well for irrigation to cultivate commercial crops. The scale showed a Cronbach's alpha of 0.625.

2.3. Data analysis

This study employed SPSS software version 22.0 to analyze data on security aspects in ethnic families in K'bang district, Gia Lai province, Vietnam. The variables studied encompassed food and nutritional security, economic security, ecological security, social security, psychological security, and physical security. Means and standard deviations were calculated for each variable, and descriptive statistics, including means and proportions, were examined. The study also explored correlations among these security aspects and conducted a simple regression analysis to investigate the relationships between them among ethnic families in the research area.

3. Results

3.1. The relationship between food security and other forms of security, such as economic, ecological, social, psychological, and physical security, is complex and interconnected.

Table 2 displays the mean scores and standard deviations for various types of security: Psychological security (M = 2.975, SD = 0.786), Social security (M = 2.888, SD = 0.960), Physical security (M = 2.792, SD = 1.194), Food and Nutritional security (M = 2.789, SD = 0.969), Ecological security (M = 2.577, SD = 0.855), and Economic security (M = 2.538, SD = 1.060).

Table 2: Mean and standard deviation of food and nutritional security, economic security, ecological security, social security, psychological security, and physical security were calculated.

Variables	N	M	SD
Nutritional Security	207	2.789	0.969
Economic Security	*207*	*2.538*	1.060
Ecological Security	207	2.577	0.855
Social Security	207	2.888	0.960
Psychological Security	207	2.975	0.786
Physical Security	207	2.792	1.194

Legend: N:sample size; M: Mean; SD: Std. Deviation

3.2. Correlation analysis

Table 3 displays the Pearson correlations between nutritional security, economic security, ecological security, social security, psychological security, and physical security.

The study revealed a significant positive correlation between food and nutritional security and various aspects of security: economic security (r= .731, p < 0.01), psychological security (r= .649, p < 0.01), social security (r= .547, p < 0.01), physical security (r= .417, p < 0.01), and ecological security (r= .381, p < 0.01).

Table 3: Interconnections exist among nutritional security, economic security, ecological security, social security, psychological security, and physical security.

Variables	Nutritional security	Economic security	Ecological security	Social security	Psychological security	Physical security
Food and Nutritional security	1					
Economic Security	.731**	.544**				
Ecological Security	.381**	.667**	.638**			
Social Security	.547**	.782**	.637**	.785**		
Physical Security	.649**		.724**	.620**	.591**	
**.p < 0.01						

3.3. Hypothesis testing

A multiple linear regression analysis was conducted to examine the relationship between various aspects of security (Food and Nutritional, Economic, Ecological, Social, Psychological, and Physical) among ethnic minorities in Gia Lai province, Vietnam. The results showed that Physical security was positively correlated with Economic security (β = .390, p < .001), Psychological security (β = .217, p < .001) and social security (β = .153, p < .001) were positively associated with economic security (β = .129, p < .001). In contrast, ecological security showed a negative association with food and nutritional security (β = -.145, p < .001).

4. Discussion

The study aimed to evaluate the needs and responses of ethnic minorities in K'bang district, Gia Lai province, Vietnam, focusing on food and nutritional security, economic security, ecological security, social security, psychological security, and physical security.

4.1. Food and nutritional security

Food and nutritional security levels are rated as normal (M=2.789; SD=0.969), consistent with previous studies indicating a positive trend in food and nutritional security (Michael N.I. Lokuruka, 2020). Our research suggests that ethnic minority families have adequate access to high-quality and sufficient quantities of food through various farming methods, ensuring food security year-round (N.V. Shwetha and Y.N. Shivalingaiah, 2019). The current status of food and nutrition security reflects government efforts to support the new rural program.

4.2. Economic security

The study indicates that economic security remains low, consistent with previous research (Shwetha et al., 2021; Nong Bang Nguyen, 2020; Le Tan Hien, 2017). Our findings suggest that engaging in dairy/sheep/goat rearing can help alleviate stress and increase income through seasonal product marketing, contributing to improved livelihoods.

4.3. Ecological security

The study has revealed that maintaining a low level of ecological security can have negative consequences. Previous research has investigated strategies to enhance ecological security, which supports the results of this study (Shwetha et al., 2021; N.V. Shwetha and Y.N. Shivalingaiah, 2019). One key finding is that implementing diversified farming practices on a farm can help mitigate the impact of adverse climatic conditions and enhance water use efficiency.

4.4. Social security

In this study, social security is generally evaluated at a standard level, consistent with previous research (N.V. Shwetha and Y.N. Shivalingaiah, 2019; Nong Bang Nguyen, 2020; Le Tan Hien, 2017). According to Kandji et al. (2006), diversifying trees on farms promotes sustainable crop production. Our findings indicate that the most highly rated criterion is that diversified farming systems provide year-round employment for farm family members, albeit only at a standard level. Additionally, diversification on farms enhances cultural diversity among farmers, fosters strong connections with extension agencies, and integrates all land-based activities.

4.5. Psychological security

Our study found that Psychological security was rated at a normal level, consistent with previous research (Shwetha et al., 2021; N.V. Shwetha and Y.N. Shivalingaiah, 2019, 2021). The factor that received the highest rating was satisfaction derived from diversified farming systems. Factors rated lower included the belief that practicing diversified farming enhances knowledge and skills, facilitates easy interaction with others, boosts confidence to try new ideas on the farm, increases demand for farm visits and advice, and elevates one's status as a leader in society.

4.6. Physical security

The data shows that physical security was assessed at a normal or standard level, consistent with prior research (Shwetha et al., 2021; Nong Bang Nguyen, 2020; Le Tan Hien, 2017). This contrasts with the results of Marzieh Keshavarz et al. (2017) who found low physical security. The study found that owning land was the most important factor in increasing the likelihood of owning a new house and also offered the highest social prestige, in contrast to the findings of Marzieh Keshavarz et al. (2017).

5. Strengths and limitations`

This study examines the livelihood security of ethnic minorities, focusing on food and nutrition, economic/financial, ecological, social, psychological, and physical security. It builds on previous research highlighting the importance of livelihood security for ethnic minority families. The anonymous data collection process ensured accurate responses without security concerns, enhancing the credibility of our findings. This study contributes to evidence-based practices in community development in Gia Lai province, providing insights into the livelihoods of ethnic

minorities. These strengths underscore the value of our study, informing future research and supporting effective interventions and policies in community development.

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Declaration of Conflicting Interest
The authors have disclosed no financial or other conflicts of interest. Additionally, the funding organization did not participate in the study design, data collection, analysis, administration, documentation, or decision to submit the manuscript for publication.

Authors' Contribution
All authors contributed to the study design, data collection, and writing of the essay. They collaborated on logistics, drafts, and final approval of the content and plagiarism check. The authors share responsibility for the completion of the research.

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