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Rural Women's Entrepreneurship and Local Economic Development: A Sustainable Livelihood Framework Perspective

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Abstract: This study aims to analyze the effects of livelihood capitals within the Sustainable Livelihood Framework on women's entrepreneurship and on gender equality in rural communities. The study focuses on four forms of capital, namely human capital, physical capital, social capital, and natural capital, with women's entrepreneurship treated as a mediating variable and gender equality as the dependent variable. A quantitative research approach was employed using Structural Equation Modeling-Partial Least Square (SEM-PLS). Primary data were obtained through questionnaires distributed to women entrepreneurs in rural areas. The results reveal that human capital and physical capital significantly and positively influence women's entrepreneurship, whereas social capital and natural capital have no significant effect. These findings suggest that strengthening individual capacities and improving access to productive infrastructure are essential for promoting women's entrepreneurship in rural areas and advancing gender-inclusive local economic development.

Keywords: Sustainable Livelihood Framework, Women's Entrepreneurship, Gender Equality.

INTRODUCTION

The main issue addressed in this journal study lies in strengthening women's entrepreneurship as a driver of local economic development alongside the enhancement of gender equality in Samosir Regency, particularly in Simanindo District. This issue includes how women entrepreneurs in their productive age utilize human capital, social capital, physical capital, and natural capital to develop trade or retail businesses, agricultural product processing, culinary enterprises, handicrafts, services, and tourism-based businesses into economic activities that generate added value, possess growth potential, and contribute to the welfare of families and communities (Wut et al., 2021). At the same time, women's entrepreneurship also becomes a space for strengthening access, participation, economic decision-making, and social recognition, making women's entrepreneurship a strategic pathway that connects Samosir's local potential with inclusive, productive, and sustainable development agendas (Abidin et al., 2025).

From an economic perspective, women's entrepreneurship in Simanindo has the potential to strengthen local development through increased household income, the creation of product

added value, the expansion of employment opportunities, and the strengthening of rural economic circulation. From the perspective of gender equality, women's business activities play a role in expanding participation, strengthening women's positions in economic decision-making, and increasing recognition of women's contributions within families and communities. The relationship between local economic development and gender equality becomes the core of this study because inclusive development can grow when women have strong access to livelihood assets and productive business opportunities (Natarajan et al., 2022).

In a broader context, the interconnection between Samosir Regency and Simanindo District reflects a pattern of local economic development based on both regional strengths and the capabilities of community actors (Darmawan, 2025). Samosir provides a regional foundation through natural resources, culture, and tourism, while Simanindo represents a practical space where communities, particularly women, transform regional strengths into real business activities (Hasriyani & Hutahaean, 2022). This relationship reinforces Simanindo's position as a representative locus for understanding the dynamics of women's entrepreneurship within the context of local economic development and gender equality in rural areas.

Based on the discussion regarding women's entrepreneurship, gender equality, local economic development, and the Sustainable Livelihood Framework approach, this journal article focuses on the role of rural women's entrepreneurship in local economic development and gender equality. The study is directed toward analyzing how livelihood capital shapes women's entrepreneurship and how women's entrepreneurship contributes to strengthening gender equality in Simanindo District, Samosir Regency. Academically, this study is expected to enrich the development of models linking women's entrepreneurship, gender equality, and local economic development within a measurable framework. Practically, the findings are expected to provide input for strengthening women's empowerment programs, developing businesses based on local potential, and formulating inclusive and sustainable rural development strategies in Simanindo District

METHODS

This study used a quantitative approach with a survey design to examine the influence of livelihood capitals on women's entrepreneurship, gender equality, and local development among rural women entrepreneurs. The study was conducted in Simanindo District, Samosir Regency, North Sumatra, from January to March 2026. The population consisted of rural women entrepreneurs who owned micro or small enterprises based on local resources, including agriculture, natural resource processing, culinary businesses, and other local economic activities. Respondents were selected using purposive sampling based on criteria such as business ownership, utilization of local resources, and involvement in local economic development. Since the study used 49 indicators, the minimum sample size was determined based on five times the number of indicators, and 350 respondents were selected to anticipate incomplete or invalid responses.

Primary data were collected through questionnaires distributed to women entrepreneurs, supported by limited interviews and observations to understand the social, cultural, and entrepreneurial context of the respondents. Secondary data were obtained from books, scientific journals, research reports, and other relevant sources related to rural women's entrepreneurship, gender equality, local development, and the Sustainable Livelihood Framework. The questionnaire used a seven-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree (Khairi, 2021). The exogenous variables consisted of natural capital, physical capital, human capital, and social capital, while the endogenous variables included women's entrepreneurship, gender equality, and local development. The indicators were adapted from previous studies and covered aspects such as access to resources,

infrastructure, skills, social networks, business innovation, economic independence, equal opportunity, decision-making, social protection, welfare, and sustainability.

Before the main analysis, the research instrument was tested on 35 respondents to assess validity and reliability (Suharto & Hariadi, 2021). Validity testing was conducted using the SEM-PLS approach through convergent validity and discriminant validity. Convergent validity was evaluated using outer loading and Average Variance Extracted (AVE), while discriminant validity was assessed using the Heterotrait-Monotrait Ratio (HTMT). Reliability was measured using Composite Reliability and Cronbach's Alpha. The data were then analyzed using Structural Equation Modeling-Partial Least Squares (SEM-PLS), which included descriptive analysis, measurement model testing, and structural model testing (Hair et al., 2014). Descriptive analysis was used to describe respondent characteristics, while the outer model assessed validity and reliability. After the measurement model met the required criteria, the inner model was tested to examine the relationships among livelihood capitals, women's entrepreneurship, gender equality, and local development.

RESULTS AND DISCUSSION

The path diagram was used to illustrate the relationships among variables in the research model being tested. The relationships among variables were presented to clarify the directions of influence among latent variables and their indicators. Each variable was illustrated together with the direction of influence to facilitate understanding. The following figure presents the relationships among the studied variables.

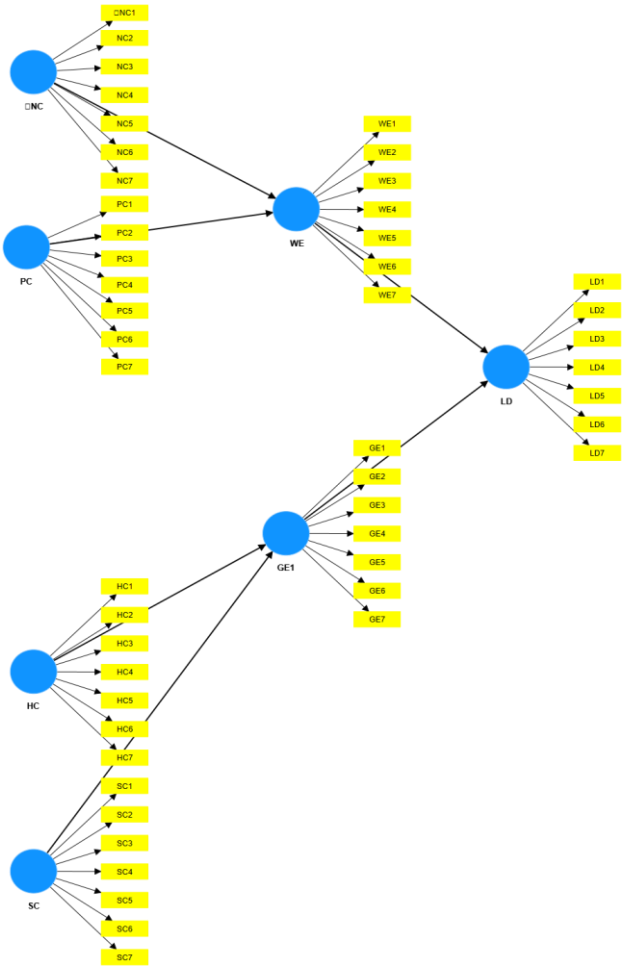

Figure 1. SmartPLS Structural Model

The path diagram illustrates the research model with latent variables measured through their respective indicators. The blue circles represent latent constructs, while the yellow boxes indicate measurement indicators. The exogenous variables on the left influence the mediating variables in the center, which subsequently affect the endogenous variables on the right; each construct comprises seven balanced indicators.

This model demonstrates the conceptual relationships among variables and serves as the basis for empirical structural testing. The diagram facilitates the analysis of the mediating variables' roles in bridging the influence of exogenous variables on endogenous variables while also evaluating the suitability of indicators in representing the constructs. Therefore, the path diagram functions as a visualization of the research design and the analytical framework of inter-variable relationships.

Hypothesis Testing

The following table presents a summary of the direct hypothesis testing results based on the bootstrapping output from SmartPLS 4.1.0.2.

Table 1. Hypothesis Testing Results

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
GE1 -> LD	-0,194	-0,200	0,087	2,218	0,013
HC -> GE	0,166	0,171	0,077	2,171	0,015
PC -> WE	0,328	0,329	0,037	8,796	0,000
SC -> GE	-0,230	-0,240	0,054	4,269	0,000
WE -> LD	-0,014	-0,009	0,094	0,149	0,441

The path coefficient testing results indicate that most relationships among variables are significant at the 5% significance level. The relationship between GE1 and LD shows a significant negative effect with an original sample value of -0.194, t-statistics of 2.218, and a p-value of 0.013. Furthermore, HC on GE has a significant positive effect with a coefficient of 0.166, t-statistic of 2.171, and p-value of 0.015. The relationship between PC and WE exhibits the strongest positive effect, with a path coefficient of 0.328, a t-statistic of 8.796, and a p-value of 0.000.

SC has a significant negative effect on WE, as indicated by a path coefficient of -0.230, a t-statistic of 4.269, and a p-value of 0.000. The relationship between NC and WE also has a significant negative effect with a coefficient of -0.109, t-statistic of 2.382, and p-value of 0.009. However, the relationship between WE and LD is not significant because the t-statistic value is only 0.149 and the p-value is 0.441, indicating that the effect of WE on LD is not statistically supported in this research model.

Discussion

The findings of this study show that livelihood capitals do not influence women's entrepreneurship, gender equality, and local development in the same way. Within the Sustainable Livelihood Framework, capital ownership alone is not sufficient to explain rural women's economic progress. What becomes more important is how each form of capital can be accessed, used, and transformed into productive capacity. This is relevant to the context of Simanindo District, where women's businesses are closely connected to local resources,

household economic activities, tourism potential, and community-based production. Therefore, the results indicate that rural women's entrepreneurship is shaped not only by the availability of resources but also by the supporting conditions that allow women to convert those resources into business growth and broader social benefits.

The strongest significant relationship was found in the effect of physical capital on women's entrepreneurship. This result indicates that access to production equipment, storage facilities, transportation, market infrastructure, digital networks, and business facilities plays a central role in strengthening women-owned enterprises. In rural areas, physical capital directly affects the ability of women entrepreneurs to produce, process, package, distribute, and market their products. When women have better access to infrastructure and productive facilities, their businesses are more likely to develop beyond subsistence or household-based economic activities. This finding confirms that women's entrepreneurship in rural areas requires concrete material support, not only motivation or informal community support. Physical capital becomes a practical foundation that enables women to transform local potential into marketable products and sustainable business activities.

The significant positive effect of human capital on gender equality also shows that education, skills, business experience, digital literacy, and market adaptation capacity contribute to strengthening women's position in economic and social life. Women with stronger human capital tend to have greater confidence, better decision-making capacity, and higher ability to participate in productive activities. In the context of rural entrepreneurship, human capital allows women not only to manage businesses but also to negotiate their role within families and communities. This result suggests that gender equality is not achieved only through formal recognition, but also through the improvement of women's capacity to access information, manage resources, make economic decisions, and participate in local development processes.

However, the negative significant effect of social capital indicates that social networks do not always produce positive outcomes for women. In rural communities, social capital can support cooperation, trust, and information exchange, but it can also reinforce traditional norms, dependency, social obligations, and unequal gender expectations. When women's social networks are limited to closed community circles or family-based relations, these networks may restrict rather than expand women's economic autonomy. This finding shows that the quality of social capital is more important than its existence. Social capital becomes beneficial only when it provides access to broader markets, business information, institutional support, and empowering networks. If social relations remain dominated by traditional expectations, they may limit women's freedom to make independent business decisions.

The negative effect of natural capital also needs to be interpreted carefully. Although Simanindo District has local resources, tourism potential, agricultural products, and natural assets, these resources do not automatically strengthen women's entrepreneurship. Natural capital can become productive only when supported by access rights, processing skills, infrastructure, technology, capital, and market connections. Without these supporting factors, dependence on natural resources may keep women's businesses in low value-added activities. For example, local raw materials may be available, but women entrepreneurs may still face limitations in product innovation, packaging, distribution, or market expansion. This finding emphasizes that natural resource availability is not enough; women entrepreneurs need the capacity and facilities to convert natural resources into competitive economic products.

The relationship between gender equality and local development shows a significant negative effect. This result suggests that improvements in gender equality indicators do not necessarily translate directly into measurable local development outcomes. In rural settings, women's increasing participation in economic activities may also be accompanied by heavier domestic responsibilities, limited institutional support, and unequal access to strategic

resources. As a result, women may become more involved in productive work without immediately generating broader economic transformation at the community level. This finding indicates that gender equality must be supported by structural changes, including access to capital, market opportunities, policy support, social protection, and fair distribution of domestic responsibilities. Without these conditions, gender equality may remain limited to participation rather than producing stronger local development outcomes.

The insignificant effect of women's entrepreneurship on local development indicates that women-owned businesses in the study area may not yet have sufficient scale, productivity, or market reach to generate broader local economic impact. Many rural women's enterprises are likely still micro-scale, informal, household-based, and dependent on local demand. Although these businesses are important for household income and women's economic participation, their contribution to wider local development may remain limited if they are not connected to larger markets, digital platforms, tourism supply chains, or institutional support systems. This result does not mean that women's entrepreneurship is unimportant. Rather, it shows that entrepreneurship needs to be strengthened through business upgrading, innovation, market access, and policy support before it can significantly affect local development.

Overall, the findings refine the application of the Sustainable Livelihood Framework in the context of rural women's entrepreneurship. The results show that not all livelihood capitals automatically produce positive effects. Physical capital and human capital appear to be more directly connected to women's economic and social empowerment because they provide practical capacity for production, management, innovation, and decision-making. Meanwhile, social capital and natural capital require stronger institutional and economic support to become productive assets. This means that livelihood capital should not be understood merely as asset ownership, but as a set of resources that must be activated through access, capability, infrastructure, and supportive social conditions.

From a practical perspective, the findings suggest that women's entrepreneurship programs in Simanindo District should prioritize infrastructure support, business facilities, digital access, market linkage, entrepreneurship training, and product innovation. Programs that focus only on community participation or local resource utilization may not be sufficient if women lack the means to process, distribute, and market their products effectively. Local governments and empowerment institutions should also ensure that social networks become more open and productive by connecting women entrepreneurs with cooperatives, tourism actors, financial institutions, training providers, and wider markets. In addition, natural resource-based businesses should be supported through value-added processing, branding, packaging, and sustainable resource management.

These findings also have implications for gender-inclusive local development. Strengthening women's entrepreneurship should not be treated only as an economic agenda, but also as a strategy to improve women's bargaining position, decision-making power, and recognition in society. However, women's participation in business must be accompanied by institutional support and fair social arrangements. If women are encouraged to become entrepreneurs without reducing structural barriers, entrepreneurship may increase women's workload without producing significant local development. Therefore, the relationship between women's entrepreneurship, gender equality, and local development requires an integrated strategy that combines human capacity, infrastructure, market access, institutional support, and gender-sensitive community development.

CONCLUSION

Based on the research findings, the main recommendation is to encourage women entrepreneurs in Simanindo District to utilize all forms of livelihood capital in a balanced manner within the Sustainable Livelihood Framework (SLF), with a focus on strengthening

physical and human capital through improving business management quality, product innovation, the utilization of digital technology, and active involvement in economic decision-making. Local governments and empowerment institutions should support practical interventions such as business facilities, market access, entrepreneurship training, digital literacy, and productive social networks, so that women-owned businesses can contribute sustainably to local economic development. In addition, strengthening gender equality should progress alongside women's economic capacity so that women can obtain equal positions within families and communities. Future studies are recommended to expand the model by incorporating additional variables such as market access, technology, business innovation, and policy support, and to apply the model in other regions using mixed-method approaches to obtain a more comprehensive understanding of the relationships among livelihood capital, women's entrepreneurship, gender equality, and local economic development.

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