

## LOCAL RESOURCES AND WOMEN'S PARTICIPATION FOR SUSTAINABLE COASTAL DEVELOPMENT

### RECURSOS LOCAIS E A PARTICIPAÇÃO DAS MULHERES PARA O DESENVOLVIMENTO COSTEIRO SUSTENTÁVEL

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#### Abstract

The SDGs for villages serve as the primary foundation for efforts to improve the welfare of coastal village communities, including gender equality, which places women as important actors in development. In Indonesia, North Sulawesi has 760 coastal villages. Hence, development efforts in coastal villages require concrete policies from the government, as well as strategies to enable coastal village communities to utilize their local resources. The aim of this study is to examine the impact of local resources and the role of women on family economics and coastal village economic development, both directly and indirectly, within the framework of sustainable development. This study used quantitative methods and was analyzed using SEM-PLS 4.0 with 408 samples. The results provide empirical evidence for seven tested hypotheses. Local resources significantly influence family economics ( $t=5.542$ ,  $p=0.000$ ) but show no direct effect on village economic development ( $t=1.711$ ,  $p=0.087$ ). Women's roles significantly affect both family economics ( $t=5.553$ ,  $p=0.000$ ) and village development ( $t=12.571$ ,  $p=0.000$ ). Family economics strongly impact village development ( $t=12.571$ ,  $p=0.000$ ). Furthermore, indirect effects confirm that local resources ( $t=5.267$ ,  $p=0.000$ ) and women's roles ( $t=5.267$ ,  $p=0.000$ ) contribute to village development through family economics. These findings highlight that the productive utilization

#### Resumo

*Os Objetivos de Desenvolvimento Sustentável (ODS) para as aldeias servem como a principal base para os esforços de melhoria do bem-estar das comunidades das aldeias costeiras, incluindo a igualdade de gênero, que coloca as mulheres como atrizes importantes no desenvolvimento. Na Indonésia, a província de Sulawesi do Norte possui 760 aldeias costeiras. Assim, os esforços de desenvolvimento nessas aldeias exigem políticas concretas do governo, bem como estratégias que permitam às comunidades costeiras utilizar seus recursos locais. O objetivo deste estudo é analisar a influência dos recursos locais e do papel das mulheres na economia familiar e no desenvolvimento econômico das aldeias costeiras, tanto de forma direta quanto indireta, dentro do quadro do desenvolvimento sustentável. Este estudo utilizou métodos quantitativos e foi analisado por meio do SEM-PLS 4.0 com 408 amostras. Os resultados fornecem evidências empíricas para sete hipóteses testadas. Os recursos locais influenciam significativamente a economia familiar ( $t=5,542$ ,  $p=0,000$ ), mas não apresentam efeito direto no desenvolvimento econômico da aldeia ( $t=1,711$ ,  $p=0,087$ ). O papel das mulheres afeta significativamente tanto a economia familiar ( $t=5,553$ ,  $p=0,000$ ) quanto o desenvolvimento da aldeia ( $t=12,571$ ,  $p=0,000$ ). A economia familiar impacta*



of local resources can increase family income and indirectly promote economic development, while women play a critical role in strengthening the family economy and improving living standards. Synergy between the government and the community in building from the bottom up, especially in coastal villages rich in potential, is the key to achieving inclusive and sustainable economic development.

**Keywords:** Family Economy. Local Resources. Village Development. Village SDGs. Women's Role.

*fortemente o desenvolvimento da aldeia ( $t=12,571$ ,  $p=0,000$ ). Além disso, os efeitos indiretos confirmam que os recursos locais ( $t=5,267$ ,  $p=0,000$ ) e o papel das mulheres ( $t=5,267$ ,  $p=0,000$ ) contribuem para o desenvolvimento da aldeia por meio da economia familiar. Esses achados destacam que a utilização produtiva dos recursos locais pode aumentar a renda familiar e, indiretamente, promover o desenvolvimento econômico, enquanto as mulheres desempenham um papel essencial no fortalecimento da economia familiar e na melhoria das condições de vida. A sinergia entre o governo e a comunidade, construindo de baixo para cima — especialmente nas aldeias costeiras ricas em potencial — é a chave para alcançar um desenvolvimento econômico inclusivo e sustentável.*

**Palavras-chave:** Economia Familiar. Desenvolvimento da Aldeia. ODS das Aldeias. Papel das Mulheres. Recursos Locais.

## 1 INTRODUCTION

### 1.1 Background of the study

One of the fundamental concepts of development for economic equality and poverty alleviation is the bottom-up approach, characterized by a gradual progression from the village to more advanced levels of development (WISNUBROTO, 2024). This approach views development as a process driven from the grassroots upward (VALVE et al., 2025), emphasizing the crucial role of the lowest strata of society, particularly village communities, as the primary drivers of economic growth and equality (PURNAMAWATI; YUNIARTA; JIE, 2023).

An alternative yet complementary perspective focuses on the empowerment of local resources within the development process (RAHMAWATI; PRASETYO; RAMADHANI, 2024). The concept of local resources highlights the importance of identifying and harnessing the diverse assets possessed by the community (ESPECTATO et al., 2022). When effectively utilized, these resources form the basis for developing a distinct regional identity, which can serve as a source of competitive advantage (PURNAMAWATI; YUNIARTA; JIE, 2023).

In achieving such a competitive advantage, regions must strengthen rural communities by leveraging local economic resources to improve living standards and foster sustainable economic growth (HAMANG, 2024; KATI KIRO; MAHAJAN; MEDARD, 2024; KATOVICH, 2024). Villages with unique characteristics and inherent competitive advantages—such as coastal villages—represent significant potential for national development (ARDITYA et al., 2022; ZHANG; XIE; ZHENG, 2023).

As an archipelagic nation, Indonesia comprises 12,510 coastal villages, representing 14.9% of the total 84,096 villages (GOODSTATS, 2025). These coastal areas hold considerable potential to enhance community welfare through improved family economics. Strong family economic conditions not only indicate prosperity at the household level but also contribute to inclusive and sustainable village development (HAMANG, 2024; NUGROHO et al., 2022; SUDARYANTO et al., 2023). However, despite their abundant and promising resources, many coastal villages remain underdeveloped compared to their inland counterparts.

A salient challenge confronting coastal communities pertains to the preeminence of fishing as the predominant livelihood. According to recent data, the number of fishermen in Indonesia has reached 2 million, with 85% of them being small-scale fishermen. This has led to a situation where their family economies are highly dependent on marine resources (ADHIEM and SAWALMAN, 2024). In the event of extreme weather, the primary means of income for fishermen is often compromised, resulting in a decline in family income that is both unpredictable and inadequate.

Moreover, the challenges confronted by fishing families include constraints in the utilization of local resources, resulting in an absence of economic diversification that could support family livelihoods (SIANTURI et al., 2024). The challenges faced by fishing families in coastal villages have been mitigated by the role of women in helping their families. This phenomenon has resulted in the delineation of two distinct roles for women: domestic, encompassing the maintenance of the household, and public, involving the pursuit of employment outside the home to contribute to familial support. As indicated by KARU (2024) and INDRAWARSIH and RATRI (2023), the subjects contributed to the family economy through various productive activities, thereby increasing income and ultimately improving the family economy (SETIANI and LAELIA, 2024). Furthermore, the subjects had a broad impact on village development. The foundation for such a transformation can be laid by leveraging the potential inherent in village-based initiatives

and grassroots movements. A comprehensive approach to sustainable village development, inclusive of the active involvement of women, is identified as a pivotal catalyst for achieving this objective.

North Sulawesi is among the top 10 regions in Indonesia with the highest number of coastal villages, totaling 760 villages (CENTRAL STATISTICS AGENCY OF SOUTH SULAWESI, 2025). The objective of this study is to elucidate how local resources and the role of women within them contribute to enhancing family income and cultivating inclusive and sustainable village development in North Sulawesi Province, Indonesia.

One of the fundamental concepts of development for economic equality and poverty alleviation is the bottom-up approach, which is characterized by a gradual progression from the village up to more sophisticated levels (WISNUBROTO, 2024). By emphasizing an understanding of development as a bottom-up process (VALVE et al., 2025), this underscores the crucial role of the lowest strata of society, such as village communities, as the primary drivers of economic growth and economic equality (PURNAMAWATI; YUNIARTA; JIE, 2023).

An alternative perspective emphasizes the notion of bottom-up development, emphasizing the empowerment of local resources within the developmental process (RAHMAWATI; PRASETYO; RAMADHANI, 2024). The concept of local resources underscores the significance of recognizing and leveraging the diverse assets possessed by the community (ESPECTATO et al., 2022). These resources, when identified and utilized, serve as the foundation for the development of a distinct regional identity, which in turn can act as a competitive advantage (PURNAMAWATI; YUNIARTA; JIE, 2023).

## **2 LITERATURE REVIEW**

### **2.1 Local resources**

Local resources are defined as the potential inherent within a specific region or 4ara that can be utilized to support various activities, including economic, social, and cultural endeavors, using the overarching aim of improving the overall well-being of the 4aramount. Local resources encompass the natural and cultural wealth inherent within a region (RAHMIATI and GOENADHI, 2022). Local resources are classified into three

types: natural resources, human resources, and social resources, as well as economic resources (NUGROHO et al., 2022; RISMAYANI et al., 2023). Each category is interconnected, forming the foundational strength for sustainable development. As RAHMIYATI and RACHMAWATI (2023) emphasize, the identification of local resources that hold a pivotal role in 5aramount-based development is of 5aramount importance. As ELVANDARI; ANWAR; and KASOGI (2025) emphasize, a participatory approach to development necessitates the recognition, appreciation, and utilization of local resources as the primary drivers of village development.

The development of local communities through the utilization of available resources has been demonstrated to foster economic autonomy, fortify cultural identity, and elevate the standard of living for these populations (PARIANGU, 2023). According to the RPJMN 2020-2024 and the United Nations Development Programme (UNDP, 2025), local economic development based on local resources is key to achieving sustainable development goals (SDGs). This phenomenon is associated with government initiatives such as self-reliant villages and village-owned enterprises (BUMDes), which underscore the significance of local potential as a bottom-up development strategy.

## **2.2 The role of women**

Women in coastal 5ommu play na 5ommunity5 role in the sustainability of coastal communities, such as the socio-economic and cultural aspects of fishing communities. Women's roles extend beyond the confines of domestic labor, encompassing economic activities, seafood processing, fish trading, and micro, small, and 5ommun enterprises (MSMEs) management. Furthermore, women play a pivotal role in household dynamics, financial management, and income redistribution (KARU, 2024; INDRAWARSIH; RATRI, 2023; SETIANI; LAELIA, 2024). The role of coastal women is often not formally recognized, yet their contributions to 5ommun income and 5ommunity resilience are significant (SINGH; TABE; MARTIN, 2022). The classification of coastal women's roles encompasses economic roles, such as the processing of fishery products; social roles, such as the management of household finances and participation in 5ommunity activities; environmental roles, such as mangrove conservation; and cultural roles, such as the transmission of local knowledge (SABILLA; HERIYANTI; DJAKFAR, 2024). Empowering women residing in coastal communities is a fundamental

strategy in the realm of community-based village development. Their active participation fosters inclusivity, reduces poverty, and strengthens the economic resilience of coastal villages (JENTOFT; CHUENPAGDEE; FRANZ, 2017; MANGUBHAI et al., 2022).

### **2.3 Improvement of family economies**

The term “family economy” is defined as the aggregate of all activities and efforts undertaken by a family to fulfill its fundamental needs, particularly in the domains of clothing, shelter, and education (TUARA, 2022). These activities and strategies are executed by household members with the objective of addressing their basic needs and enhancing their well-being. As posited by FIRMANTO et al. (2024), the family economy encompasses the management of income, expenditure, consumption, savings, and productive activities of family members. According to Becker’s household economic theory, households function as rational production and consumption units in the allocation of limited resources. According to a study by SARI and KARMINI (2019), factors influencing the family economy include family income from the husband’s, wife’s, children’s, or home-based businesses, and participation. A robust family economy serves as the cornerstone of a family village economy, where stable income and access to local resources are pivotal in fostering productive village activities and facilitating development initiatives (ANGGRAINI et al., 2021).

### **2.4 Rural economic development**

Economic development is a multifaceted concept that encompasses not only the growth in Gross Domestic Product (GDP), but also the distribution of income, the reduction of poverty, and the enhancement of quality of life and human capital (SANGGRANGBANO; ANTOH; TIMISELA, 2024; TODARO and SMITH, 2020). Concurrently, the community of villages is a dynamic process, encompassing changes aimed at enhancing village welfare through the enhancement of fundamental services, infrastructure development, local economic development, and community empowerment (SUMARYANTO et al., 2021). Conversely, a prominent economic development theory is community-based development, which emphasizes local participation, utilization of local resources, and community empowerment. Moreover sustainable development,

which seeks to harmonize economic, social, and environmental aspects, is another 7ommunity7 theory (SANGGRANGBANO; ANTOH; TIMISELA, 2025). Local economic development strategies encompass the identification of local resource potential, the empowerment of MSMEs and the 7ommun economy, and the empowerment of women as local economic actors. The National Development Planning Agency (Bappenas) has emphasized the pivotal role of rural economic advancement through the integration of national planning with local strengths, particularly the contribution of women. A substantial body of research has demonstrated a correlation between the increase in the economic participation of women and the acceleration of sustainable development (UM WOMEN, 2022). As demonstrated by JENTOFT et al. (2017), the integration of women in coastal development has been shown to enhance local resilience to crises. The assessment of village development can be facilitated by a range of indicators, including but not limited to per capita income growth, access to education and infrastructure, innovation and digitalization of the local economy, 7ommunity participation and decision-making, and 7ommunity welfare (MAYYORA et al., 2025). At the village level, the number of SMEs, household income, and village self-reliance are key indicators (MINISTRY OF VILLAGE AND REGIONAL DEVELOPMENT OF INDONESIA, 2025). In terms of implications, village development must be based on local resources, active 7ommunity participation, gender inclusivity, and social justice aligned with the SDGs, specifically SDG 1 (No Poverty), SDG 5 (Gender Equality), SDG 8 (Decent Work and Economic Growth), and SDG 11 (Sustainable Cities and Communities) in particular.

## 2.5 Hypotheses development

H1: There is a significant influence between local resources (X1) and 7amily economy (Y1).

H2: There is a significant influence between local resources (X1) and economic development (Y2).

H3: There is a significant influence between the role of women (X2) and the 7amily economy (Y1).

H4: There is a significant influence between women's role (X2) and Economic Development (Y2).

H5: There is a significant influence between family economy (Y1) and economic development (Y2).

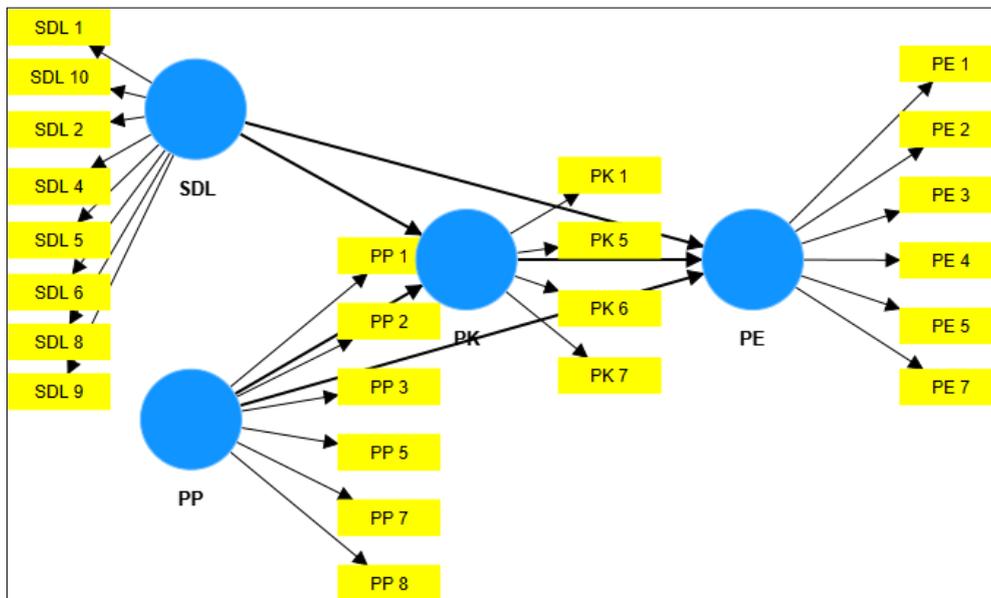
H6: There is a significant indirect influence between local resources (X1) and economic development (Y2) through the family economy (Y1).

H7: There is a significant indirect effect of women's role (X2) on economic development (Y2) through the family economy (Y1).

## 2.6 Conceptual framework

**Figure 1**

*Shows the research framework model.*



Research Framework

## 3 METHODOLOGY

This study adopts a quantitative methodology, leveraging the Structural Equation Modeling-Partial Least Squares (SEM-PLS) version 4.0 methodology to assess the relationship model between direct and indirect variables (AFRIFA-YAMOA, 2024). The study is designed to analyze the association between local resources, women's roles, family economy, and coastal village economic development. The population under study consists of coastal fishing families dispersed across 15 districts/cities in North Sulawesi Province. The procedure for sample selection employed is stratified purposive sampling,

with the following criteria: residence in coastal villages, lineage from fishing families, and women who are involved or have an impact on family economic activities of coastal fishing villages. To manage the survey logistics in a large area, the sample will be determined using the Lemeshow formula due to the large and unknown population size (YANTO; AL AMMARU, 2024), considering the geographical distribution and representativeness of each district/city in North Sulawesi. The minimum number of respondents amounts to 10–15 times the total of indicator variables. Accordingly, the total number of respondents directly surveyed is 408, representing coastal villages distributed across 15 districts/cities within North Sulawesi Province. The data was collected through the administration of a structured questionnaire, which was disseminated directly via Google Forms. This method was employed to expedite the data collection process and ensure the inclusion of island areas in the study. The questionnaire was meticulously engineered to assess salient research variables.

The measurement of local resource variables was facilitated by the utilization of indicators, encompassing natural resources, human resources, economic resources, infrastructure resources, institutional resources, and governance. These indicators have been previously delineated in extant research. The measurement of the variable of women's role involved the utilization of indicators, including women's role in the production and utilization of natural resources, women's role in the economy and income, women's role in management and decision-making, women's access and capacity, and the impact on welfare and development. These indicators were adapted from previous studies. The measurement of the Family Economy variable is accomplished by using the following objects/indicators :The following variables have been selected for study: household income, assets and ownership, consumption and welfare, business activities and productivity, and financial security. These variables have been adapted from previous studies. The following items/indicators are used to measure the economic development variable: The following factors have been identified as relevant to the present study: Village Economic Growth, Labor Absorption, Human Resource Capacity, Economic Infrastructure, Welfare, and Equity. These factors have been adapted from previous studies. Structured indicators based on a 5-point Likert scale, with 1 denoting "strongly disagree" and 5 denoting "strongly agree," will be used to evaluate each variable. The variables and their main indicators, as well as the relevant measurement items, loading factors, and references, are all listed in detail in **Table 1**.

**Table 1**  
*Convergent Validity and Variable Descriptions*

Variable	Item Code	Loading Factor	Reference(s)
Local Resources	X1.1	0.728	
	X1.2	0.837	
	X1.3	0.800	CHEN; LIU; XUE (2023), KGATHI;
	X1.4	0.718	MMOPELWA; MOSEPELE (2005),
	X1.5	0.764	MOHRAMANI et al. (2024), RAHMIYATI and
	X1.6	0.762	RACHMAWATI (2023),
	X1.7	0.836	
	X1.8	0.805	
The Role of Women	X2.1	0.773	CHANCE and ABDOUL (2025), DJUNAIDAH
	X2.2	0.788	and NURMALIA (2019), KUSUMAWARDHANI
	X2.3	0.764	and SUSILOWATI (2021), NURUL and NUR
	X2.4	0.813	(2024), PALASH et al. (2024), RIZKY; ANWAR;
	X2.5	0.825	ARDIAN (2025), SETIANI and LAELIA (2024)
	X2.6	0.829	
Improvement of Family Economies	Y1.1	0.792	CHANCE and ABDOUL (2025), DIANSARI et al.
	Y1.2	0.808	(2020), KUSUMAWARDHANI and
	Y1.3	0.835	SUSILOWATI (2021), NUGROHO;
	Y1.4	0.798	SUSANDINI; ISLAM (2020), NURUL and NUR
Rural Economic Development	Y2.1	0.811	(2023), SETIANI and LAELIA (2024)
	Y2.2	0.876	ADITYA; EDIYONO; SUGIHARDJO (2023),
	Y2.3	0.709	AMERIDYANI; TOKITO; SAIZEN (2025),
	Y2.4	0.886	NURUL and NUR (2024), RIZKY; ANWAR;
	Y2.5	0.767	ARDIAN, 2025
	Y2.6	0.862	

Source: Processed Data (2025)

An outer model will be used to evaluate the instrument's validity and reliability, incorporating convergent and discriminant validity tests, as well as loading factors and AVE (Average Variance Extracted). In this context, values exceeding 0.70 are generally considered acceptable. The Fornell-Larcker criteria will also be employed to ensure that the square root of AVE for each construct exceeds its correlation with other constructs. For the purpose of evaluating reliability, the reliability of constructs will be assessed using Cronbach's Alpha and Composite Reliability considered, with an acceptable threshold value of  $> 0.70$ . To evaluate the existing hypotheses, the Inner Model test will be employed in conjunction with the bootstrapping procedure within the Structural Equation Model with Partial Least Squares (SEM-PLS) framework.

## 4 RESULTS

**Table 2**

*Fornell-Larcker Criterion for Discriminant Validity*

	Rural Economic Development	Improvement of Family Economies	The Role of Women	Local Resources
Rural Economic Development	0.821			
Improvement of Family Economies	0.805	0.808		
The role of women	0.652	0.634	0.799	
Local Resources	0.617	0.632	0.689	0.782

Source: Processed Data (2025)

The measurement model determines how the constructs are related to their respective indicator. The present study evaluates the internal consistency, reliability, and convergent validity of the measurement model based on the recommended procedures (SARSTEDT; RINGLE; HAIR, 2021). The results of the analysis conducted for convergent validity (ALRAWHANI; ROMLI; AL-SHARAFI, 2025). It is essential to provide evidence that substantiates the fact that the AVE value each construct demonstrates values higher than the maximum a threshold of 0.50. Furthermore, the findings should demonstrate that the indicator loadings of the outer model significantly surpass the established threshold value of 0.70, as illustrated in **Table 1**. These results imply that each indicator and its corresponding concept have a strong positive association. To ascertain discriminant validity, the Fornell-Larcker criteria were utilized, which entailed the comparison of the square root of the average (AVE value for each latent variable with the correlation coefficient between variables (Fornell's clauses). As illustrated in **Table 2**, the diagonal line signifies the square root (AVE) for the latent variables, with the remaining cells denoting the correlation coefficients between each pair of latent variables. The findings of this study demonstrate that all square roots (AVE) exceed the respective correlation coefficients, thereby substantiating the hypothesis that discriminant validity is adequate.

**Table 3***Reliability Test Result*

Construct	Cronbach's Alpha	Composite Reliability
Rural Economic Development	0.902	0.908
Improvement of Family Economies	0.823	0.824
The Role of Women	0.887	0.895
Local Resources	0.909	0.914

Source: Processed Data (2025)

Construct reliability can be evaluated through Cronbach's alpha and Composite Reliability measures (XIA et al., 2024). Values are considered acceptable when their values are above the threshold of 0.70. Every component of the model's constructs, as shown in **Table 3**, have strong internal consistency values, suggesting that they are reliable and suitable for more structural study.

**Table 4***R-Squared and Adjusted R-squared Value*

Endogenous Variable	R-Squared	Adjusted R-squared
Rural Economic Development	0.685	0.683
Improvement of Family Economies	0.475	0.472

Source: Processed Data (2025)

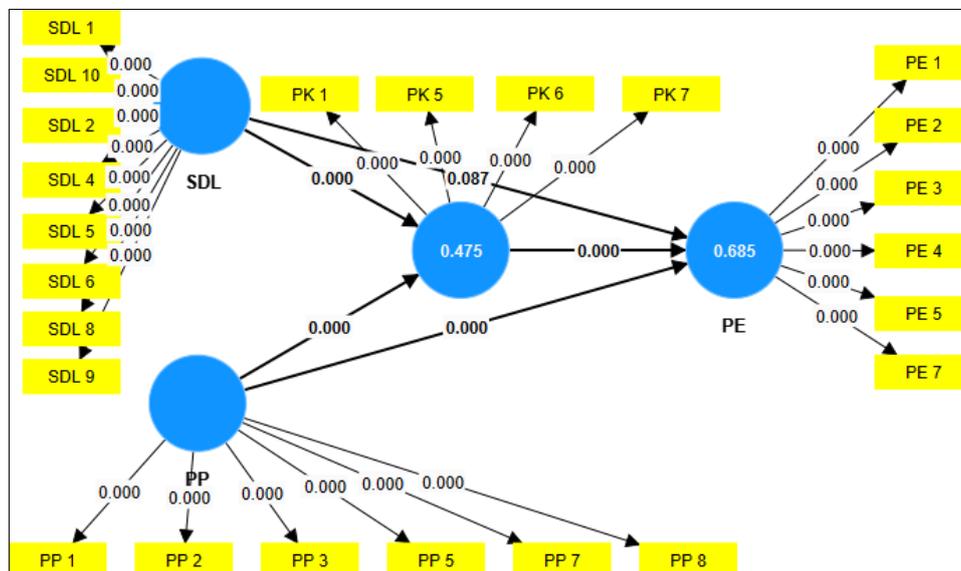
The structural model's evaluation entails the utilization of R-Square, a statistical measure, to ascertain the extent to which each variable contributes, along with the adjusted R-Square for each endogenous latent variable, thereby gauging its predictive capacity (SETIAWAN and UTOMO, 2024). An adjusted R-Square value greater than 0.75 signifies a robust model, as evidenced by the Village Economic Development model. Conversely, an adjusted R-Square value greater than 0.50 denotes a moderate model, as illustrated by the Family Economy model, as depicted in **Table 4**.

In **Table 4**, for rural economic development, the adjusted R-square is 0.683, indicating that the combination of local resources and the role of women explains 68% of the variation in rural economic development, indicating a strong model. Similarly, for the family economy, the adjusted R-square is 0.472, indicating a moderate explanatory power, where local resources and the role of women together explain approximately 48%

of the variation in the family economy.

**Figure 2**

*Result Model*



As illustrated in **Figure 2**, the bootstrapping procedure in PLS-SEM is employed for the purpose of testing the hypothesis. The results obtained are consistent with those presented in **Table 5**. It has been determined that there is a statistically significant ( $p < 0.00$ ) direct correlation between family economy and local resources, while the direct relationship between local resources and village economic development has not been found to be statistically significant ( $p < 0.087$ ). Moreover, the direct relationship between the role of women and family shows a statistically significant effect ( $p < 0.000$ ). The direct relationship between the role of women and family economy shows a statistically significant effect ( $p < 0.000$ ). Additionally, the correlation between local resources and village economic development through the family economy shows a statistically significant effect ( $p < 0.000$ ). The correlation between the role of women in village economic development through the family economy shows a statistically significant effect ( $p < 0.000$ ).

**Table 5***Test Results and Hypothesis*

	Original Sample	Sample Mean (M)	Standard Deviations (STDEV)	T-Statistics	P-Value
SDL - PK	0.371	0.377	0.067	5.542	0.000
SDL - PE	0.087	0.086	0.051	1.711	0.087
PP - PK	0.379	0.378	0.068	5.553	0.000
PP- PE	0.195	0.197	0.054	3.611	0.000
PK - PE	0.627	0.627	0.050	12.571	0.000
SDL - PK -PE	0.232	0.236	0.044	5.267	0.000
PP - PK - PE	0.237	0.237	0.048	4.971	0.000

Note = Bold numbers that have a statistically significant effect on P-Value < 0.05

The results presented in **Table 5** and **Figure 2** provide empirical evidence supporting the testing of the seven hypotheses in this study. For Hypothesis 1, H1 is accepted and H0 is rejected, indicating a statistically significant effect between local resources and the economy of coastal fishing families (t-statistic 5.542, p-value 0.000). Hypothesis 2 shows that H1 is rejected and H0 is accepted, meaning there is no statistically significant direct influence between local resources and coastal village economic development (t-statistic 1.711, p-value 0.087). Hypothesis 3 reveals that H1 is accepted and H0 is rejected, showing a direct, statistically significant influence between the role of women and the economy of coastal fishing families (t-statistic 5.553, p-value 0.000). In Hypothesis 4, H1 is accepted and H0 is rejected, confirming a direct, statistically significant influence between the role of women and coastal village economic development (t-statistic 12.571, p-value 0.000). Hypothesis 5 indicates H1 is accepted and H0 is rejected, with a direct, statistically significant relationship between the family economy and coastal village economic development (t-statistic 12.571, p-value 0.000). Hypothesis 6 also accepts H1 and rejects H0, demonstrating a direct, statistically significant influence between local resources through the family economy on coastal village economic development (t-statistic 5.267, p-value 0.000). Finally, Hypothesis 7 accepts H1 and rejects H0, indicating a direct, statistically significant influence between the role of women through the family economy on coastal village economic development (t-statistic 5.267, p-value 0.000).

## 5 DISCUSSION

### 5.1 The influence of local resources on the family economy has significant statistical results

Local resources in villages, when managed effectively and efficiently, will have a direct impact on the family economy through the utilization of economic products from fisheries, agriculture, crafts, tourism, and the processing of natural products into ready-to-use products, and the establishment of productive business units such as SMEs, which will enhance production capacity and consumption in the village, ultimately becoming a source of income and improving the family economy.

According to RAHMADANI and PUTRA (2024), by utilizing local resources such as increasing fish catch through technology, transforming seawater into salt, setting up facilities for shrimp-paste producers, processing leftover market fish into salted products, and supervising the upkeep of mangrove forests in shoreline villages, the economy can be improved through increased community income. The findings of GILLILAND; SANCHIRICO; and TAYLOR (2020) indicate that the initial impact of utilizing local resources, particularly in the local tourism sector, on household real income shows a largely consistent pattern in the short term, where local tourism activities influence household real income and community well-being. Meanwhile, according to ABDURAKHMANOVA and AHROROV (2025), Community-based ecotourism has substantially boosted household earnings and job opportunities in rural areas of Samarkand, Uzbekistan.

### 5.2 The impact of local resources on rural economic development has not yielded statistically significant results

This is due to a lack of exploration of local resources in coastal villages for potential positive economic activities that could stimulate rural economic development. For instance, in North Sulawesi, coastal villages continue to prioritize their abundant marine resources, which are currently utilized exclusively for fishing and the sale of fish. However, the diversification of these products could generate added value, thereby encouraging the establishment of processing factories in these coastal villages. This, in

turn, could stimulate advanced village development through infrastructure development, job creation, and the enhancement of the coastal village community's well-being. The marketing of these finished products, rather than raw materials, has the potential to generate new employment opportunities.

Moreover, research employing in-depth literature review techniques underscores the necessity of concurrently addressing infrastructural and human resource limitations to stimulate inclusive and sustainable rural economic development (JUDIANTO; EKASARI; ELIDA, 2022). A comprehensive strategy, incorporating suitable investment programs and empowerment initiatives, is imperative to establish villages on a sustainable growth trajectory, thereby maximizing their local economic potential.

The findings from RAHMADANI and PUTRA (2024) also reveal that substandard human resources, inadequate community participation in planning, and deficient management of coastal areas result in coastal programs functioning suboptimally, thereby creating challenges for social and economic development.

### **5.3 The influence of women's roles on the economy of coastal villages has yielded statistically significant results**

Women's roles in North Sulawesi are not limited to managing households. Various productive activities carried out by coastal women in North Sulawesi, as observed, have helped improve the family economy by opening fish processing businesses. When their husbands bring in the catch from the sea, women process it to generate additional income. Additionally, women also participate in fishing at sea to sell the catch at traditional markets to help generate income. Therefore, it must be acknowledged that women's roles within the family can enhance family economic well-being.

According to the findings of CHANCE and ABDOUL (2025) from a study in the rural area of Mbe, Cameroon, in order to guarantee their families' financial and physical well-being, women are essential in resource management. In addition to their caregiving responsibilities, rural women are vital to the local economy. Women labor in agriculture, local trade, and resource management due to a lack of formal employment opportunities, all of which greatly contribute to the stability and resilience of their families' economy. Meanwhile, according to PALASH et al. (2024), research findings indicate that the Community Savings Group (CSG) intervention has a significant positive impact on the

economy of fishing communities, as seen in increased income, savings, and household spending, as well as the empowerment of women. These results demonstrate that relating to women's engagement involved in economic activities by means of loan and savings clubs not only enhances their economic role but within the family but also promotes access to finance, improves literacy, and creates an environment that supports productive engagement, thereby contributing to the reduction of gender inequality in coastal communities. According to NUGROHO; SUSANDINI; ISLAM (2020) and WARDANA; ARUM; SARIPAH (2022), research findings indicate that the role of coastal women in supporting their husbands' income can increase family income levels. Additionally, women also play a unique role as the backbone of the family. Similarly, the findings of DJUNAIDAH and NURMALIA (2019) show that the average contribution of women to family income is 64.9%, with a range of 32.8% to 80.6%. This circumstance shows that women's roles as economic players cannot be disregarded.

#### **5.4 The influence of women's roles on the economic development of coastal villages has been statistically significant**

Women's roles are not only successful in managing household affairs, children, and husbands; they have also been found to have a direct impact on development in coastal villages. In North Sulawesi, various initiatives by women have led to the formation of productive women's communities that drive village development. One such initiative is the introduction of community-based social and economic innovations. Additionally, in some North Sulawesi coastal villages, women have become pioneers in inclusive village fund management (MINISTRY OF VILLAGE AND REGIONAL DEVELOPMENT OF Indonesia, 2025). Furthermore, women's roles can support achieving the SDGs for villages, Goals 1: No Poverty, 5: Gender Equality, 8: Inclusive Economic Growth, and 14: Life Below Water are among them.

Research findings by NURUL and NUR (2024) conclude that empowering women in the blue economy through 14 innovative and efficient practices can foster inclusive and sustainable development, bolster the local economy, safeguard the environment, and enhance the well-being of coastal communities. Meanwhile, ADITYA; EDIYONO; SUGIHARDJO (2023) discovered that empowering coastal women helps to SDGs in climate change mitigation, gender equality, and poverty reduction. Furthermore,

the findings of RIZKY; ANWAR; ARDIAN (2025) undercore the vital role of women in fostering sustainable development and economic success within coastal areas.

### **5.5 The impact of enhanced family economic conditions on economic development in coastal villages has been determined to be statistically significant**

The enhancement of family economic conditions has been identified as a pivotal factor in the assessment of community welfare, serving as an indicator of successful development. In the context of constrained family economic conditions, households are primarily focused on meeting fundamental needs, such as food security. However, when economic conditions improve, families can allocate more resources toward educational opportunities for their children and access to health facilities. These factors contribute to an enhancement in the quality of human resources within the village. As posited by PURBANTARA; MUJIANTO; RAHMAWATI (2021), the attainment of rural economic development may prove challenging in the absence of stable and empowered economic capacity among households, who are regarded as the primary agents in this process.

The enhancement of the economic well-being of coastal village communities through diversified strategies has the potential to make substantial contributions to the overarching goal of economic development. As posited by CAHYADINATA; NUSRIL; GUSHEVINALT (2020), the economic empowerment of coastal communities, such as cooperatives, has been demonstrated to engender an augmentation in family income. This, in turn, has been shown to result in an escalation in community participation and economic activities, an augmentation in capital provision, and an optimization of resources, as well as an enhancement in business competitiveness. These activities have the potential to promote sustainable economic development. According to UMAR and FACHRUDIN (2023), the development of sustainable fisheries agribusiness models has the potential to enhance income generation and guarantee the sustainable management of natural resources, helping to advance sustainable development. Concurrently, as posited by ZULHAM et al. (2025), the enhancement of infrastructure can precipitate a shift in the economic base of villages, thereby facilitating enhanced access to markets. This phenomenon can precipitate heightened economic activities and augmented income opportunities for households, thereby fostering sustainable village development.

### **5.6 The influence of local resources on the family economy and village economic development is statistically significant**

The local community should appreciate the local resources in coastal villages in North Sulawesi. When families manage these resources productively, they generate economic value and increase their income. This helps drive the village economy and economic development. This increases consumption and demand for local products. Additionally, the abundance of local resources can give coastal villages a competitive advantage, attracting investment opportunities for economic development. This creates new markets, opens new job opportunities, and leads to the development of new infrastructure. Therefore, a bottom-up approach that starts with identifying the village's potential local resources will increase the income of productive families and ultimately influence the village's economic development.

Local economic development requires more than recognizing the area's potential; it must begin with strengthening the smallest unit: the family. According to research findings by ZAINAL et al. (2024), utilizing local resources, such as village-based ecotourism, can enhance the rural collective economy, increase community income, and strengthen village civilization development. Meanwhile, research findings by ZULHAM et al. (2025) measuring sustainable rural development in relation to the SDGs shows that its progress is largely influenced by the abundance of natural resources.

### **5.7 The influence of women's roles through the family economy on local economic development has had a statistically significant impact**

Women residing in coastal areas of North Sulawesi play a strategic role in supporting family livelihoods, particularly in enhancing family economic resilience. When families with more stable economic conditions have the capacity to educate their children, seek medical care, and innovate, they also drive village economic growth through local consumption and entrepreneurship. Women's contributions to the family economy serve as a driving force for local change and strengthen the economic foundation of coastal villages. When women are empowered, building more resilient and sustainable villages becomes achievable.

According to CHANCE and ABDOUL (2025), economically, women play a crucial role in agriculture, small-scale trade, and financial decision-making, thereby making significant contributions to household income and resilience family well-being, financial security, and sustainable community growth. The findings from AMERIDYANI; TOKITO; SAIZEN (2025) show that production from Mother's Work Groups (KKI) generates additional income for families through communal sales of kasing and enhances social networks within the community. These efforts aim to improve socioeconomic status while also contributing to the overall socioeconomic development of the village. Meanwhile, findings from WADEI et al. (2025) indicate that Women's participation in peanut processing results in notable advancements in income access and overall economic well-being, as well as promoting equitable development. The results presented by NURUL and NUR (2024) indicate that women act as agents of change in increasing family income, creating job opportunities, and protecting marine ecosystems, thereby enabling the blue economy to foster inclusive and sustainable development, strengthen the local economy, preserve the environment, and improve the well-being of coastal communities through innovative and efficient practices.

## 6 CONCLUSION

This research seeks to explore the extent to which local resources and the role of women influence family economics and coastal village economic development, considering both direct and indirect pathways in line with sustainable development goals. The findings reveal several findings related to inclusive and sustainable rural development. First, effectively managing local resources can directly impact the family economy. Establishing productive businesses in villages will create income opportunities and improve the local economy. Second, utilizing local resources has not yet directly impacted village economic development. In coastal villages in North Sulawesi, communities heavily rely on selling raw materials, such as fish. This leads to a lack of product diversification, which could otherwise drive job creation, the establishment of factories, and infrastructure expansion. To achieve inclusive and SDGs in coastal villages, the limitations of existing infrastructure in rural areas and the lack of human resource skills must be addressed collectively. Third, women's participation in the family's economic activities have been proven to improve it through opening processing

businesses and participating in fishing. Fourth, women significantly impact village economic development by introducing community-based socio-economic innovations and playing a pioneering role in inclusive village fund management through the various initiatives they undertake. Fifth, the family economy contributes to village economic development. Families with economic capacity and empowerment can meet their basic needs, send their children to school, and access adequate healthcare. This influences the quality of human capital and promotes sustainable development within the village. Sixth, the family economy indirectly impacts village economic development through local resources. Optimizing local resources can give villages a competitive advantage, impacting not only the economy of families who manage local resources but also attracting investment opportunities for inclusive and sustainable village development. Finally, women's participation in the family's economic activities positively impact village economic development. women's participation in the family's economic activities catalyze local change and strengthen the economic foundation of coastal villages. When women have income, they can improve family economics, accelerating economic growth in villages and promoting inclusive and sustainable development. In conclusion, this study emphasizes the importance of local resources, the role of women in the family economy, and their impact on inclusive and sustainable village economic development.

The study recommends utilizing local resources to seek competitive advantages and diversify existing products so that villages can impact income and development. The study also recommends empowering and recognizing the strategic role of women so they can continue to generate income and improve their skills through training. It is hoped that the government will support this by mapping the potential of local resources in coastal villages, providing women with training and capital, strengthening family businesses through cooperatives and market access, supporting infrastructure to open market access, and involving all community members in coastal villages to promote inclusive and sustainable economic development through programs and actions with tangible impacts.

### **AUTHOR CONTRIBUTIONS**

Conceptualization, Merry Christie Natalia Rumagit and Pradipta Mandasari Parasan.; methodology, Merry Christie Natalia Rumagit; software Pradipta Mandasari Parasan.; validation, Merry Christie Natalia Rumagit, Viviane Manoppo and Pradipta Mandasari

Parasan; formal analysis, Merry Christie Natalia Rumagit; investigation, Viviane Manoppo; resources, Viviane Manoppo; data curation, Pradipta Mandasari Parasan; writing—original draft preparation, Merry Christie Natalia Rumagit; writing—review and editing, Viviane Manoppo, Pradipta Mandasari Parasan; visualization, Pradipta Mandasari Parasan; supervision, Merry Christie Natalia Rumagit; project administration, Merry Christie Natalia Rumagit; funding acquisition, Direktorat Penelitian dan Pengabdian Kepada Masyarakat Kementerian Pendidikan Tinggi, Sains, dan Teknologi. the final published version of the manuscript has been read and approved by all authors.

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### Authors' Contribution

All authors contributed equally to the development of this article.

### Data availability

All datasets relevant to this study's findings are fully available within the article.

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