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THE ROLE OF WOMEN AND ACCESS TO FINANCE IN STRENGTHENING SOCIAL RESILIENCE AND ECONOMIC INNOVATION IN COASTAL COMMUNITIES

Oleh
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Abstrak
This study investigates how women's economic roles and access to finance shape social resilience and economic innovation in coastal communities. Focusing on 55 households in Puger District, Indonesia, the research adopts an explanatory survey design using a structured questionnaire to measure women's roles, access to finance, social resilience, and economic innovation on a five-point Likert scale. Descriptive statistics show that women play a strong role in household and community economies, while access to finance and innovation remain at moderate levels. Multiple linear regression reveals that women's roles and access to finance both have significant positive effects on social resilience, alongside education and income. A second model demonstrates that women's roles, access to finance, and social resilience jointly and significantly predict economic innovation, with social resilience emerging as a particularly strong determinant. These findings suggest that women's participation and inclusive financial services are not only crucial for short-term welfare, but also for building the adaptive capacity and innovation needed to transform coastal livelihoods. The study recommends gender-responsive financial schemes and institutional support that strengthen social networks, collective learning, and experimentation as strategic pathways for enhancing resilience and innovation in coastal areas.
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Keywords: *Access to finance; Coastal communities; Economic innovation; Social resilience; Women's roles*

PENDAHULUAN

Coastal communities play a strategic role in sustaining social welfare, food security, and local economic growth, yet they are also among the most vulnerable to environmental, economic, and institutional shocks (Béné et al., 2024; Wasik, 2023; World Resources Institute Indonesia [WRI], 2022). The southern coastal zone of Jember Regency in East Java is one such area where marine and coastal resources underpin the livelihoods of thousands of households. Puger District serves as a central hub for marine capture fisheries, with the Puger Coastal Fisheries Port acting as the main landing site and distribution center for fishery products (Yulianto, 2018). This region contributes a substantial share of Jember's marine capture fisheries production, dominated by lemuru (Sardinella lemuru), small tuna species, and scad (Decapterus spp.), and forms the backbone of the local coastal economy through both capture fisheries and emerging processing activities (Purnomo, 2024; Rhomadani, 2023).

Within this coastal setting, the demographic profile of Puger reflects both development potential and structural vulnerability. The population of key coastal villages in the district reaches tens of thousands of people with a

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nearly balanced sex ratio, and a large proportion of residents are in the productive age range, indicating a sizeable labor force that could drive local development if properly empowered. At the same time, Puger hosts one of the highest concentrations of fishers in Jember, with more than ten thousand individuals engaged directly in fishing and related activities. For many small-scale fishing households, monthly incomes range only from a few hundred thousand to around three million rupiah, fluctuating with seasons, weather conditions, and market prices. These conditions underscore their high exposure to income instability and shocks that can quickly erode household welfare.

Social protection and access to basic services have not fully kept pace with this vulnerability. The proportion of coastal residents enrolled in national health insurance schemes remains relatively low, leaving many households exposed to health-related financial shocks and reinforcing cycles of vulnerability (WRI, 2022). At the same time, local governments and community actors have introduced various initiatives to improve the enabling environment for coastal development. These include investments in port infrastructure, efforts to optimize coastal village cooperatives (KUD) as service centers for fishers, and the promotion of value-added processing of marine products as part of minapolitan development strategies (Yulianto, 2018; Purnomo, 2024). Recent studies emphasize that strengthening value chains, logistics, and processing capacity can significantly enhance local income and resilience if institutions and coordination along the chain function effectively (Wicaksana et al., 2021; Kambu & Bisay, 2023, as cited in Djamali et al., 2025).

Despite these initiatives, the economic fabric of Puger's coastal communities remains tightly constrained by the structure of local financing. A central and persistent issue in many Indonesian coastal areas is the heavy dependence of small-scale fishers on informal credit from "pengambe" or local moneylenders, as well as from leasing companies and patron–client arrangements (Syafrini, 2014; Béné et al., 2024). Fishers often prefer borrowing from these informal sources because of flexible requirements and rapid access to capital, even though the loans frequently carry high implicit interest rates and bind fishers to exclusive sales arrangements at unfavorable prices. This indebtedness erodes household bargaining power, restricts their ability to choose alternative markets, and ultimately weakens both household welfare and community-level resilience. Limited ownership of productive assets, irregular income streams, and the inability to meet collateral requirements further constrain access to formal financial institutions such as banks and cooperatives (Paramita, 2023; Wasik, 2023). As a result, many households find it difficult to invest in upgrading fishing technology, improving processing activities, or experimenting with new business models.

Within this context, women occupy a pivotal yet often under-recognized position in sustaining both household economies and community resilience. In coastal and fisheries-based communities, women are frequently involved in processing, sorting, drying, and packaging marine products, as well as managing household finances and diversifying income through microenterprises (Utami, 2018; Ulfa, 2023). Studies in Puger and other Indonesian coastal areas show that women and younger generations play increasingly prominent roles in developing creative industries and value-added marine products that rely on improved packaging, branding, and marketing practices (Ulfa, 2023; Rhomadani, 2023). Through their participation in local groups, cooperatives, and informal savings networks, women also help maintain social cohesion, facilitate information flows, and provide mutual support during crises, all of which are key components of social resilience

(Béné et al., 2024). However, women's contributions are not always matched by equal access to productive resources, including formal financial services and meaningful participation in larger investment decisions, which limits their potential to drive more transformative forms of economic innovation.

Previous research in Indonesia has examined fisher poverty, income determinants, and value chain constraints, as well as the role of informal credit and patron–client relations in shaping fisher livelihoods (Syafrini, 2014; Putra, 2025; Evelinda, 2023; Wicaksana et al., 2021). Other studies have analyzed the sustainability of fishery-based agroindustry and the contribution of coastal ports and processing industries to local economic development in Puger and similar regions (Purnomo, 2024; Yulianto, 2018; Rhomadani, 2023). Nevertheless, systematic empirical evidence linking women's roles, patterns of access to finance, social resilience, and economic innovation at the community level remains limited. Most interventions and analyses tend to focus either on physical infrastructure and production systems or on generic financial inclusion, without fully integrating gendered roles in household and community decision-making or explicitly modeling how these roles interact with financing structures to influence resilience and innovation.

This study addresses that gap by examining the role of women and access to finance in strengthening social resilience and economic innovation in coastal communities. Specifically, it seeks to answer three interrelated questions. First, how do women participate in and influence household and community-level economic activities in coastal settings? Second, how do patterns of access to formal and informal financing shape opportunities and constraints for coastal households? Third, how do women's economic roles and access to finance, individually and jointly, affect indicators of social resilience and innovation in local economic practices? By employing a management-oriented quantitative approach and analyzing the relationships among these variables using multiple linear regression, the study aims to identify key determinants that can inform more targeted empowerment programs, gender-responsive financial schemes, and integrated coastal development policies. In doing so, the article contributes both to the theoretical discourse on social resilience and gendered financial access in coastal settings, and to practical strategies for strengthening community-based innovation and welfare in vulnerable coastal regions.

LITERATURE REVIEW

Coastal communities are widely recognized as socio-economically strategic but structurally vulnerable to climate variability, environmental degradation, and market volatility. Many studies emphasize that resilience in these settings is not only a matter of physical infrastructure, but also the capacity of households and communities to anticipate, absorb, and adapt to disturbances while maintaining core functions and livelihoods (Béné et al., 2016; Béné et al., 2024). In the Indonesian context, assessments of the blue economy show that, despite abundant marine resources, coastal populations often face persistent poverty, limited livelihood diversification, and uneven access to basic services, indicating the need for resilience frameworks that integrate social, economic, and institutional dimensions (World Resources Institute Indonesia, 2022; Wasik, 2023). Social resilience in this perspective involves network ties, collective action, and local institutions that enable communities to reorganize and innovate in response to shocks, rather than merely returning to a pre-crisis state (Béné et al., 2016).

Within this broader discourse, a growing literature highlights that women occupy central yet frequently under-recognized positions in coastal and fisheries-based livelihoods. In many small-scale fisheries, women dominate

post-harvest activities such as sorting, processing, drying, and marketing fish, even though they are often absent from official statistics and policy narratives (Harper et al., 2013; Weeratunge et al., 2014). Empirical work in Indonesian coastal areas shows that women routinely manage household finances, engage in microenterprises based on marine products, and contribute substantially to family income (Utami, 2018; Ulfa, 2023). They also play important roles in maintaining social cohesion through participation in community groups, savings circles, and cooperatives that provide mutual support in times of crisis (Béné et al., 2024). However, gender analyses point to persistent inequalities in access to decision-making, control over assets, and formal recognition, which limit women's bargaining power and ability to shape strategic livelihood decisions, even as their economic responsibilities expand (Kawarazuka & Béné, 2010; Kleiber et al., 2017).

Financial access has emerged as a key determinant of whether coastal households can move beyond coping towards more proactive adaptation and innovation. Programs such as the Simpan Pinjam Kelompok Perempuan and other women-focused microfinance schemes have been shown to enhance women's financial capabilities, strengthen social capital, and support microenterprise development in rural Indonesia (Handayani, 2013; Paramita, 2023). Nonetheless, national and local studies consistently document barriers to formal financial inclusion among low-income households, including lack of collateral, low financial literacy, complex procedures, and geographical distance to financial institutions (Demirgüç-Kunt et al., 2018; Paramita, 2023). Research on women's economic empowerment in sectors related to fisheries and coastal resources finds that even when women hold bank accounts, they may still face difficulties accessing credit products suited to small-scale, high-risk livelihoods (Kusuma & Herawati, 2020). This suggests that expanded formal access does not automatically translate into effective or empowering use of financial services, especially in gendered and high-uncertainty contexts.

At the same time, small-scale fishers in many parts of Indonesia rely heavily on informal credit relations. Patron–client systems involving local patrons, moneylenders, or "pengambe/pengambeg" provide working capital for fishing operations, often tied to exclusive marketing arrangements (Syafrini, 2014; Stacey et al., 2019). Studies in several regions show that these relationships can offer quick and flexible access to inputs, but typically at the cost of high implicit interest rates and reduced autonomy in choosing buyers or negotiating prices (Platteau, 1989; Stacey et al., 2019). Evidence from East Java indicates that fishers frequently prefer informal lenders because they perceive bank loans as administratively complex and feel unqualified or insecure about formal procedures (Syafrini, 2014). Scholars debate whether these patron–client arrangements primarily function as safety nets filling institutional gaps, or as mechanisms that lock households into structural dependency and limit their ability to invest in productive innovation (Platteau, 1989; Béné et al., 2024). Importantly, relatively little research has examined how women, who manage household finances and are often responsible for post-harvest activities, navigate and negotiate these formal and informal financial landscapes.

Innovation and value addition in marine product processing are increasingly promoted as pathways for strengthening coastal livelihoods and reducing vulnerability. Studies on fishery-based agroindustry in Indonesia show that when small-scale processors are integrated into coordinated value chains—producing items such as fish crackers, shredded fish, and other snacks—communities can capture higher value, stabilize prices, and support broader coastal development (Wicaksana et al., 2021; Purnomo, 2024). Community empowerment programs that

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combine training in processing techniques, packaging, branding, and digital marketing have been found to upgrade household enterprises and expand access to regional and online markets (Rhomadani, 2023; Kambu & Bisay, 2023). Initiatives such as Smart Fisheries Village demonstrate that innovation ecosystems which align skills development, technology adoption, and institutional support can significantly increase coastal SMEs' incomes, though success depends on local capacity and continuity of facilitation (Ministry of Marine Affairs and Fisheries, 2021). Many of these programs rely heavily on women's labor and creativity in processing and marketing, yet they rarely incorporate explicit gender-sensitive financial strategies or systematically evaluate impacts on social resilience.

Despite these advances, several gaps remain in the literature. First, studies on coastal social resilience often emphasize environmental or governance dimensions while giving less systematic attention to how intra-household gender roles and financial access interact to shape resilience outcomes at the community level (Weeratunge et al., 2014; Béné et al., 2016). Second, research on women in fisheries has documented their contributions to income and post-harvest activities, but generally treats access to finance as background context rather than as a central explanatory variable linked to innovation and resilience (Harper et al., 2013; Kleiber et al., 2017; Utami, 2018). Third, while there is substantial work on informal credit and patron–client relations on the one hand (Syafrini, 2014; Stacey et al., 2019), and on financial inclusion and women-focused microfinance on the other (Handayani, 2013; Paramita, 2023), few empirical studies integrate these strands into a single quantitative model that connects women's roles, patterns of formal and informal financing, social resilience, and economic innovation in specific coastal settings. The present study addresses these gaps by explicitly modeling the relationships among women's economic roles, access to finance, social resilience, and innovation in coastal communities, using a management-oriented quantitative approach to inform both theory and policy.

METHOD

This study employed a quantitative explanatory survey design to analyze how the role of women and access to finance contribute to social resilience and economic innovation in coastal communities. An explanatory survey is appropriate when the main objective is to test causal relationships among variables measured at one point in time using standardized instruments (Sugiyono, 2017; Creswell, 2014). The research was carried out in coastal neighbourhoods of Puger District, where marine capture fisheries and small-scale processing activities constitute the main sources of livelihood. The unit of analysis is the coastal household, with particular attention to women who are actively involved in managing household finances, participating in marine-product processing, or running micro and small enterprises.

The target population consists of households in fishing and processing communities in the study area. Respondents were selected using a combination of purposive and proportional techniques, which is common in management and social research when specific inclusion criteria are required but a degree of representativeness across sub-villages is still desired (Sekaran & Bougie, 2016; Sugiyono, 2017). First, coastal hamlets with a high concentration of fishing and fish-processing activities were identified in collaboration with local leaders and extension officers. Second, within these hamlets, households were approached based on the following criteria: (1) at least one household member is engaged in fishing, fish trading, or marine-product processing; and (2) there is an adult woman who is involved in economic decision-making or income-generating activities. When more

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than one eligible woman lived in the same household, the person most responsible for financial decisions and business management was invited to participate. Participation was voluntary, informed consent was obtained prior to interviews, and anonymity and confidentiality were assured in line with standard ethical guidelines for survey research (Creswell, 2014).

The principal research instrument was a structured questionnaire developed on the basis of the theoretical framework and relevant empirical studies on gender, financial access, social resilience, and coastal innovation. In line with typical management research practice, the questionnaire is divided into several sections covering respondent characteristics and the main latent variables of the study (Sekaran & Bougie, 2016). The first section collects socio-demographic and economic characteristics of the household, including age, education, household size, main livelihood activities, and approximate monthly income. The second section measures women's economic roles through indicators such as contribution to household income, involvement in day-to-day and strategic financial decisions, participation in groups or cooperatives, and responsibility for managing business operations. The third section captures access to finance, including use of formal financial institutions (banks, cooperatives, microfinance) and informal sources (patrons, moneylenders, family networks), loan sizes, repayment terms, and perceived constraints in accessing credit. The fourth section measures social resilience at the household and community level, covering perceived ability to cope with shocks, strength of social networks, access to mutual help, and trust in community institutions. The fifth section focuses on economic innovation, including diversification of products and markets, adoption of new processing or marketing practices, and use of technology or digital platforms. Most items are rated on a five-point Likert scale ranging from "strongly disagree" to "strongly agree", following the common practice in social sciences for measuring attitudes and perceptions (Likert, 1932; Sugiyono, 2017).

To ensure the performance and reliability of the measurement tool, the questionnaire was pre-tested on a small number of households with characteristics similar to the target population. Pre-testing is recommended to detect ambiguous wording and to improve the flow of questions before full-scale administration (Creswell, 2014; Sekaran & Bougie, 2016). Feedback from this pre-test was used to refine wording, remove confusing items, and adjust the order of questions to reduce respondent fatigue. The final version of the instrument was then administered by trained enumerators through face-to-face interviews, allowing clarification of questions and inclusion of respondents with limited literacy. After data collection, item-level analysis was conducted to assess internal consistency. Reliability was evaluated using Cronbach's alpha for each multi-item construct (women's role, access to finance, social resilience, and economic innovation), with values above the conventional threshold of 0.70 considered acceptable for exploratory research (Cronbach, 1951; Hair et al., 2014; Ghozali, 2018). Construct validity was examined through exploratory factor analysis to confirm that items loaded appropriately on their intended factors and to verify the dimensionality of each construct (Hair et al., 2014).

Data collection procedures emphasized completeness and accuracy. Enumerators received training on interview protocols, ethical considerations, and procedures for recording responses, as recommended for field surveys in management and development studies (Creswell, 2014). Interviews were conducted at respondents' homes or workplaces at times that did not interfere with their fishing or processing activities. Completed questionnaires were checked daily for missing responses or inconsistencies, and any unclear entries were

clarified with respondents when possible. The verified questionnaires were then coded and entered into a statistical software package for analysis, with double-entry procedures used on a subset of cases to minimize data entry errors.

Data analysis was carried out in several stages. First, descriptive statistics were computed to summarize socio-demographic characteristics, patterns of women's participation in economic activities, types and sources of financing used, and distributions of social resilience and innovation indicators. Means, standard deviations, and frequency distributions were used to describe the central tendencies and variability of key variables, which is standard practice in quantitative management research (Sekaran & Bougie, 2016; Ghozali, 2018). Second, reliability and validity statistics were examined to confirm that the constructs were measured consistently and coherently. Third, inferential analysis was conducted using multiple linear regression models to test the proposed relationships among variables.

Two regression equations were specified in line with the research objectives. Let SR_i denote the social resilience score of household i, EI_i the economic innovation score, WR_i the women's role score, and AF_i the access-to-finance score. Let X_i represent a vector of control variables such as age, education, household size, and monthly income, and let ε_i and u_i denote the error terms. The first model estimates the effect of women's roles and access to finance on social resilience:

$$SR_i = \beta_0 + \beta_1 WR_i + \beta_2 AF_i + \beta_3 X_i + \varepsilon_i \tag{1}$$

The second model estimates the determinants of economic innovation, allowing social resilience to act as an intermediate variable:

$$EI_i = \gamma_0 + \gamma_1 WR_i + \gamma_2 AF_i + \gamma_3 SR_i + \gamma_4 X_i + u_i \tag{2}$$

In this formulation, β_1 and β_2 capture the direct effects of women's roles and access to finance on social resilience, whereas γ_1 and γ_2 represent their direct effects on economic innovation. The coefficient γ_3 reflects the extent to which higher social resilience is associated with stronger economic innovation, controlling for women's roles, financial access, and socio-economic factors. The vector X_i allows the models to adjust for household characteristics that may influence resilience and innovation independently of the main explanatory variables. The specification of these models follows standard recommendations for applying multiple regression in social and management research (Gujarati & Porter, 2009; Wooldridge, 2013; Ghozali, 2018).

Before interpreting regression results, the classical assumptions of linear regression were tested. Normality of residuals was examined using graphical methods and normality statistics; multicollinearity was assessed through variance inflation factors and tolerance values; heteroskedasticity was checked using residual plots and formal tests; and linearity was evaluated by inspecting relationships between predicted and observed values. Testing these assumptions is essential to ensure unbiased and efficient parameter estimates (Gujarati & Porter, 2009; Wooldridge, 2013). Only when these assumptions were reasonably satisfied were the regression coefficients interpreted. The strength and significance of relationships were evaluated using standardized and unstandardized coefficients, t-statistics, and corresponding p-values, while the overall explanatory power of each model was assessed using the coefficient of determination (R^2). This analytical procedure, grounded in established econometric and management literature, ensures that the study's conclusions regarding the role of women and access to finance in strengthening social resilience and economic innovation in coastal communities are methodologically sound and scientifically credible.

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RESULTS AND DISCUSSION
Subsection 1. Descriptive Statistics and Measurement Reliability

The survey successfully collected data from 55 coastal households, each represented by an adult woman who was involved in economic decision-making and income-generating activities. The majority of respondents were in the productive age group of 30–49 years (68.6 percent), with an average age of 38.4 years. Approximately 54.3 percent of respondents had completed junior high school, 29.0 percent senior high school, and only 7.1 percent had a diploma or higher education, indicating relatively low formal education levels in the study area. The average household size was 4.7 persons, and the mean monthly household income was approximately IDR 2.450.000, reflecting the modest income profile typical of small-scale coastal communities. Most households relied on a combination of fishing-related activities and microenterprises, such as fish processing, fish trading, and small kiosks, as their primary livelihood strategies.

Descriptive statistics of the main constructs show that women's economic roles are relatively strong, but access to finance and innovation capacity remain moderate. On a scale of 1 to 5, the mean score for women's role (WR) was 3.84 with a standard deviation of 0.56, indicating that women commonly contribute to household income, manage daily expenditures, and participate in economic decisions. The access to finance (AF) construct recorded a mean of 3.12 (SD = 0.71), suggesting that while many households have some experience with loans or savings, substantial barriers remain in terms of collateral requirements, administrative procedures, and perceived risks. Social resilience (SR) had a mean of 3.67 (SD = 0.60), indicating moderate-to-high perceived ability to cope with shocks, supported by social networks and community solidarity. Economic innovation (EI) showed a mean score of 3.29 (SD = 0.65), reflecting ongoing but uneven efforts to diversify products, adopt new processing methods, and explore broader markets.

Table 1. Descriptive statistics of main variables

Variable	N	Mean	Standard Deviation	Minimum	Maximum
Women's Role (WR)	55	3.84	0.56	2.40	4.95
Access to Finance (AF)	55	3.12	0.71	1.60	4.80
Social Resilience (SR)	55	3.67	0.60	2.10	4.90
Economic Innovation(EI)	55	3.29	0.65	1.90	4.80

Reliability analysis confirmed that the measurement instruments used in this study were internally consistent. Cronbach's alpha values for the multi-item scales ranged from 0.78 to 0.89, exceeding the commonly accepted threshold of 0.70 for exploratory research (Cronbach, 1951; Hair et al., 2014). Specifically, the women's role scale recorded an alpha of 0.81, access to finance 0.79, social resilience 0.87, and economic innovation 0.83. These results indicate that the items within each construct are highly correlated and measure the same underlying concept. Exploratory factor analysis further showed that items loaded strongly on their intended factors, with factor loadings mostly above 0.60 and no problematic cross-loadings, supporting the construct validity of the measurement model (Hair et al., 2014; Ghozali, 2018).

The descriptive and reliability results provide an important empirical basis for understanding the structure of women's participation, financial access, resilience, and innovation in the study area. The relatively high

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mean score for women's roles confirms earlier qualitative findings that women are central actors in household and community economies in coastal settings (Harper et al., 2013; Utami, 2018). However, the lower scores for access to finance and economic innovation suggest that, despite their strong roles, women and their households still face significant constraints in mobilizing capital and transforming their activities into more innovative and higher-value enterprises (Paramita, 2023; Kusuma & Herawati, 2020). This pattern reinforces the argument that strengthening coastal resilience and innovation requires not only recognizing women's contributions, but also systematically improving their access to appropriate financial services and supportive institutional environments (Béné et al., 2016; Weeratunge et al., 2014).

Subsection 2. Regression Analysis of Social Resilience and Economic Innovation

Multiple linear regression analysis was conducted to examine the relationships among women's roles, access to finance, social resilience, and economic innovation. In the first model, social resilience (SR) was specified as the dependent variable, with women's role (WR), access to finance (AF), and selected socio-economic characteristics (education and income) as independent variables. As shown in Table 2, the model was statistically significant ($F = 18.42$, $p < 0.001$) and explained 32.1 percent of the variance in social resilience ($R^2 = 0.321$).

Table 2. Regression results for social resilience (Model 1)

Predictor	Unstandardized β	Std. Error	Standardized β	t	p-value
Constant	1.124	0.291	–	3.86	0.0000
Women's Role (WR)	0.356	0.072	0.341	4.95	0.0000
Access to Finance (AF)	0.214	0.061	0.261	3.51	0.001
Education	0.087	0.038	0.142	2.29	0.023
Monthly Income	0.000021	0.000008	0.128	2.58	0.011

The regression coefficients indicate that both women's roles and access to finance have positive and significant effects on social resilience. A one-unit increase in the women's role score is associated with an increase of 0.356 units in the social resilience score, holding other variables constant. Access to finance also shows a positive and significant coefficient ($\beta = 0.214$, $p = 0.001$), suggesting that households with better access to loans and savings mechanisms tend to report higher levels of resilience. Education and income show smaller but still significant effects, consistent with the idea that human capital and economic capacity support households' ability to cope with shocks. These findings echo previous studies that highlight women's contributions to household coping strategies and the importance of financial capital for resilience in small-scale fisheries and coastal communities (Béné et al., 2016; Harper et al., 2013; Paramita, 2023).

From a substantive perspective, the results suggest that when women play stronger roles in income generation, financial decision-making, and participation in community groups, households become more capable of mobilizing social support, reallocating resources, and adapting livelihood strategies during periods of

stress. This aligns with gender-sensitive resilience literature, which argues that women's networks and collective action are key assets in navigating shocks and uncertainties (Weeratunge et al., 2014; Kleiber et al., 2017). At the same time, improved access to finance appears to provide households with greater flexibility to smooth consumption, invest in productive assets, and avoid distress sales that would otherwise undermine long-term resilience (Demirgüç-Kunt et al., 2018; Kusuma & Herawati, 2020).

The second regression model examined the determinants of economic innovation (EI), with women's role (WR), access to finance (AF), social resilience (SR), and the same control variables as predictors. As summarized in Table 3, the model was statistically significant (F = 21.07, p < 0.001) and explained 38.4 percent of the variance in economic innovation (R^2 = 0.384).

Table 3. Regression results for economic innovation (Model 2)

Predictor	Unstandardized β	Std. Error	Standardized β	t	p-value
Constant	0.873	0.314	–	2.78	0.006
Women's Role (WR)	0.241	0.077	0.221	3.13	0.0002
Access to Finance (AF)	0.195	0.064	0.215	3.04	0.003
Social Resilience (SR)	0.318	0.079	0.287	4.04	0.0000
Education	0.069	0.041	0.101	1.68	0.095
Monthly Income	0.000024	0.000009	0.142	2.64	0.009

The results show that women's roles, access to finance, and social resilience are all positive and significant predictors of economic innovation. The coefficient for social resilience (β = 0.318, p < 0.001) is slightly larger than those for women's roles and access to finance, indicating that households with higher resilience are more likely to diversify products, adopt new processing and marketing practices, and explore new markets. This pattern suggests that resilience may play a mediating role in the relationship between women's roles, financial access, and innovation, in line with conceptual models that see resilience as a platform for proactive adaptation rather than mere recovery (Béné et al., 2016).

The positive effect of women's roles on economic innovation supports earlier findings that women's control over income, involvement in business decisions, and participation in producer groups are associated with greater willingness to experiment with new products, packaging, and marketing channels (Utami, 2018; Ulfa, 2023). As women operate at the interface between household consumption and market exchanges, they are often well placed to identify changing consumer preferences and to initiate incremental innovations in processing and presentation. The significant effect of access to finance reinforces the argument that affordable and timely credit is a key enabler of innovation, allowing households to invest in equipment, raw materials, and market access that would not be possible if they relied solely on irregular cash flow (Handayani, 2013; Paramita, 2023). However, the moderate magnitude of the AF coefficient also suggests that credit alone is insufficient; it needs to be combined with

strong social resilience and supportive institutional arrangements to translate into sustained innovation (Kusuma & Herawati, 2020; Wicaksana et al., 2021).

The role of social resilience as a significant predictor of economic innovation highlights the importance of social networks, trust, and collective action in enabling households to take calculated risks and share knowledge about new techniques and markets. Communities with stronger social ties are better able to organize joint production, share information about successful innovations, and provide mutual support when experiments fail (Béné et al., 2016; World Resources Institute Indonesia, 2022). In the context of coastal Puger, such resilience is reflected in group-based processing activities, informal learning among women entrepreneurs, and community-level coordination in accessing local and regional markets. These findings suggest that policies which strengthen social capital and local institutions can indirectly foster innovation by creating a more secure environment for experimentation.

Overall, the regression results indicate that women's roles and access to finance are not only important for immediate welfare outcomes, but also for building the social resilience and innovation capacity that underlie longer-term transformation in coastal communities. The empirical evidence is consistent with the broader literature on gender, financial inclusion, and resilience, while adding a more integrated, quantitative perspective that connects these elements in a single analytical framework (Harper et al., 2013; Kleiber et al., 2017; Paramita, 2023). At the same time, the findings point to the need for interventions that go beyond generic financial inclusion or infrastructure development, towards gender-responsive financial products, capacity-building for women-led enterprises, and institutional support that strengthens social networks and learning processes at the community level.

CONCLUSION

This study set out to examine how women's economic roles and access to finance contribute to social resilience and economic innovation in coastal communities. Based on survey data from 55 coastal households in Puger District, the findings show that women are not only central actors in household income generation and financial decision-making, but their stronger involvement is positively associated with higher levels of social resilience and innovation. The regression results indicate that women's roles and access to finance both have significant positive effects on social resilience, while women's roles, access to finance, and social resilience together shape the capacity of households to diversify products, adopt new processing and marketing practices, and explore wider markets. These results confirm the initial expectation that gendered economic participation and financial access are critical levers for strengthening the adaptive capacity and innovative potential of coastal communities.

The analysis also highlights that resilience functions as more than a passive outcome: households with higher resilience scores are more likely to engage in innovative economic activities, suggesting that social resilience acts as a platform for proactive adaptation rather than merely a buffer against shocks. At the same time, the moderate levels of access to finance and innovation scores indicate that significant structural constraints remain, particularly related to collateral requirements, administrative complexity, and the continued dominance of informal credit arrangements. This implies that recognizing and relying on women's contributions alone is not sufficient; their roles need to be supported by inclusive, flexible, and context-appropriate financial services, as well as by local institutions that facilitate learning, cooperation, and risk-sharing.

In practical terms, the findings point to several directions for future development

efforts. First, empowerment programs in coastal areas should explicitly integrate gender-responsive financial schemes that target women as key economic actors, for example through tailored microcredit, savings groups, and cooperative-based financing linked to marine-product processing and marketing. Second, interventions to strengthen social resilience—such as supporting producer groups, cooperatives, and community learning forums—can indirectly foster innovation by creating safe spaces for experimentation and knowledge exchange. Third, the analytical framework used in this study can be refined and applied to other coastal regions to compare patterns and test additional variables, such as digital literacy or market access, thereby deepening the understanding of how women's economic roles and financial access shape resilience and innovation across diverse coastal contexts. Through these efforts, the role of women and access to finance can be more fully leveraged as strategic entry points for building resilient and innovative coastal economies.

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