

The Existence of Women's Collective Enterprises for Coastal Fisheries Sustainability

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ABSTRACT

Women's groups play a vital role in Indonesia's coastal fisheries, particularly in fish processing microenterprises, yet little is known about how they sustain their existence through business networks. This study examined how two women-led groups, Fatimah Azzahra in Makassar (urban) and Ajjulukana in Takalar (rural) have sustained fish-based processing enterprises for over a decade. Using a qualitative case study and social network analysis (SNA), the study maps key actors supporting enterprise sustainability, including raw material suppliers, marketing agents, and institutional stakeholders. These activities reduce post-harvest loss, improve shelf life, and contribute to local livelihood resilience. The urban group benefits from formal marketing networks, while the rural group relies on social solidarity and village support systems. This study highlighted how women's enterprises contribute to sustainable fisheries by strengthening local value chains and promoting community-based utilization of marine resources. Policy recommendations emphasize tailored strategies to support rural and urban group models, including capacity-building programs to strengthen rural women's access to markets and digital marketing initiatives to reduce urban groups' dependency on intermediaries. The study emphasizes tailored strategies to support rural and urban group models.

INTRODUCTION

Women-led microenterprises in the post-harvest fisheries sector are increasingly recognized for their contributions to food security, value addition, and the economic empowerment of coastal communities in developing countries (Hassan *et al.*, 2013). In particular, fish processing activities conducted by women help reduce post-harvest loss and maximize the use of locally abundant small pelagic and demersal species (Rana *et al.*, 2021). Despite their vital role, these women's groups often operate in informal sectors, with limited access to finance, markets, and policy recognition (Harper *et al.*, 2017; Pailin *et al.*, 2025). In rural contexts, strong community ties and traditional support systems play a significant role in sustaining operations, whereas urban-based enterprises benefit more from formalized value chains and market access (Rupasingha &

Contreras, 2014). In Indonesia, women represent a significant share of labor in fish processing, yet their contributions remain underreported and undervalued in national fisheries policies (**Alami & Raharjo, 2017; Purwanti *et al.*, 2021; Qulubina *et al.*, 2024).**

Empowering these actors through capacity building, access to capital, and inclusive governance is critical for both gender equity and sustainable coastal fisheries management (**Torre-Castro, 2019; Lawless *et al.*, 2021).** Previous research has focused on financial inclusion, digital tools, and market strategies for women's MSMEs (**Angreyani, 2023; Kagiri & Muathe, 2023; Suci *et al.*, 2025).** but less attention has been paid to their role in supporting fisheries sustainability through local resource utilization and enterprise networking. This study aimed to fill that gap by analyzing the existence of two women-led fish processing groups in coastal Indonesia, Fatimah Azzahra and Ajjulukana and how their operations strengthen household resilience, reduce waste, and support sustainable utilization of fish resources. By using social network analysis, this study also highlights the structural positioning of these groups within broader fisheries-related institutional frameworks (**Díaz-Reviriego *et al.*, 2017; Kamiyama *et al.*, 2018).**

MATERIALS AND METHODS

This study was conducted between January and March 2025 in two coastal locations in Indonesia, Makassar City and Takalar Regency. These sites were purposively selected to represent contrasting urban and rural coastal settings, both of which are home to women's fish processing groups that have remained active for over a decade. The contrasting contexts allowed for a comparative exploration of how network structures influence business sustainability in different socio-economic environments (**Neumeyer & Santos, 2018; Ivanova, 2021; Kusmantini *et al.*, 2021).**

A qualitative descriptive design with a multiple case study approach was employed, focusing on two women-led fish processing groups (urban and rural). This approach was prioritized because it provides nuanced insights into enterprise dynamics, social relations, and network structures in real-life settings. This method allows for contextual and nuanced insights into enterprise behavior within real-world settings (**Phukrongpet *et al.*, 2021).**

Data were collected through in-depth interviews, participant observation, and documentation of group activities. Key informants included group leaders, members involved in processing, and institutional stakeholders such as village officials, fisheries officers, and marketing agents. Secondary data were also sourced from government reports, academic literature, and group records to complement primary findings.

To analyze the structure of the business networks, we used Social Network Analysis (SNA) and visualized the networks using Gephi 0.10 software. Gephi was

particularly suitable for this study because it enables the visualization and measurement of complex actor relationships within fisheries business networks. Network metrics such as degree centrality, closeness centrality, betweenness centrality, and eigenvector centrality were used to identify key actors and assess the strength and influence of connections (**Frantz & Carley, 2017**). These metrics help explain how information and resources flow within the network and how central nodes contribute to enterprise sustainability. Data triangulation was applied to strengthen validity, combining interviews, field notes, and network maps. Member checking was conducted with selected informants to confirm the accuracy of interpretations.

This methodological approach integrates social network theory with fisheries enterprise analysis, aligning with emerging research that views connectivity and institutional support as critical to small-scale fishery resilience (**Bodin & Crona, 2009; Choudhury et al., 2021**). This integration offers a novel contribution by moving beyond financial and empowerment analyses, showing how the structural positioning of women-led groups within business networks shapes their long-term existence and fisheries sustainability.

RESULTS AND DISCUSSION

The women's fish processing groups of Fatimah Azzahra (Makassar) and Ajjulukana (Takalar) have demonstrated enterprise sustainability for over a decade. Both groups began as small community initiatives supported by the local fisheries office and academic institutions. Over time, they expanded their membership and product range, contributing not only to household income but also to the more efficient use of fishery resources.

1. Enterprise growth, product diversification, and resource optimization

The women-led fish processing groups, Fatimah Azzahra in Makassar and Ajjulukana in Takalar have shown sustained growth over a span of more than a decade. Initially, both groups started with limited membership and a single flagship product. Over time, driven by social cohesion, informal leadership, and institutional collaboration, these groups diversified their product offerings and increased community participation.

The Fatimah Azzahra group evolved from producing basic tuna floss into a diversified enterprise offering *otak-otak*, boneless milkfish, fish nuggets, chips, and cookies, adapting to urban consumer preferences. Meanwhile, Ajjulukana expanded from mackerel floss into a range of traditional snacks rooted in local culture, such as fish balls, seaweed-based products, and traditional cakes.

Such diversification aligns with evidence that small-scale women-led processing enterprises in Southeast Asia play a strategic role in stabilizing household income and enhancing food product innovation (**Ferrer et al., 2021**). Product diversification also contributes to greater resilience and market adaptability among women entrepreneurs

(Bagheri *et al.*, 2023; Lanivich *et al.*, 2024). The development profiles of both groups are summarized in Table (1), highlighting their growth in duration, membership, product range, and complementary activities.

Table 1. Profile and development of women-led fish processing enterprises in Makassar and Takalar

Women's MSME groups	Years in Operation	Current Number of Members	Initial Product	Current Product Development	Additional Activities
Fatimah Azzahra (Makassar)	14	53	Tuna Floss	<ul style="list-style-type: none"> • Tuna Floss • Otak otak • Boneless Milkfish • Nugget • Various Fish Chips • Cookies • Business Capital Loans 	Social activities and empowerment programs for fishing families and youth
Ajjulukana (Takalar)	23	47	Mackerel Floss	<ul style="list-style-type: none"> • Fish Floss • Fish Balls • Seaweed Balls • Nuggets • Various Chips • Traditional Cakes 	Entrepreneurship training for households and youth in fishing communities Formation of Ajjulukana Business Cooperative

Source: **Processed primary data, 2025**

Table (1) illustrates the significant development of two women-led fish processing MSME groups, Fatimah Azzahra in Makassar and Ajjulukana in Takalar. Although both began as small-scale community initiatives with a single flagship product, they have achieved sustained growth for over a decade. Fatimah Azzahra, operating in an urban setting, now has 53 active members and has diversified its products from basic tuna floss to include otak-otak, boneless milkfish, nuggets, various fish chips, and seafood-based cookies. In contrast, Ajjulukana, based in a rural area, has 47 members and has expanded into culturally rooted local products such as fish balls, seaweed balls, and traditional cakes. This diversification not only reflects adaptation to consumer preferences but also serves as a key resilience strategy in the face of market fluctuations (Purcell *et al.*, 2021).

In both groups, value-added fish processing serves as a key strategy for enhancing income, minimizing waste, and optimizing the use of locally available fishery resources.

The women-led enterprises process small pelagic and demersal species such as mackerel (*Rastrelliger* spp.), tuna (*Thunnus* spp.), and milkfish (*Chanos chanos*), which are often abundant yet underutilized or vulnerable to spoilage due to limited cold-chain infrastructure in coastal areas.

By converting these species into processed products such as fish floss, nuggets, balls, seaweed-based snacks, and traditional cakes, the groups extend shelf life, increase market value, and reduce post-harvest losses. These practices directly contribute to food system resilience and support sustainability in small-scale fisheries (**Astuti & Hadiyanto, 2018; Karim, 2023**).

Furthermore, women in both groups demonstrate efficient adaptation to local consumption patterns by creating culturally resonant products. This aligns with studies showing that localized processing improves product acceptability and sustains traditional food systems (**Ekayani et al., 2018; Materia et al., 2021**).

Beyond product development, both groups have engaged in institutional and community-based initiatives that reinforce their social and economic resilience. Fatimah Azzahra conducts social programs for fisher families and coastal youth, while Ajjulukana has established a cooperative and delivers entrepreneurship training for local communities. These activities reflect a transformation from mere income-generating units into community empowerment agents with long-term orientation (**Suciptaningsih et al., 2020; Suharnani & Putri, 2023**). Geographic context plays a key role in shaping these strategies (**Smith & McColl, 2016; Müller & Korsgaard, 2018**). Fatimah Azzahra leverages access to modern markets and formal institutional networks in the urban environment, whereas Ajjulukana relies on community solidarity and cultural values as its foundation for enterprise sustainability. These findings contribute to resilience theory and small-scale enterprise development by showing how women-led product diversification functions as an adaptive mechanism sustaining fisheries-based livelihoods.

2. Social capital and network configuration

The results of the Social Network Analysis (SNA) reveal a sharp contrast in the structural patterns between the two women-led coastal enterprise groups, Ajjulukana (rural) and Fatimah Azzahra (urban). Based on degree centrality, Ajjulukana holds the most central position in the network with 39 direct connections. However, network connectivity is not solely reliant on the core actor, other significant nodes include the Village Office (9 connections), Supplier 1 (7), and the Fisheries and Marine Affairs Office (6), forming a communitarian structure. This network configuration emphasizes the vital role of local institutions in supporting MSME sustainability and aligns with similar findings in rural network studies (**Gursida, 2025**).

In contrast, the Fatimah Azzahra group emerges as the dominant node in the urban network, heavily supported by MarketingAgent1 and MarketingAgent2, which together constitute the backbone of product distribution. This centralized, formal, and market-

based structure reflects the typical patterns of urban MSME networks, where formal actors serve as key hubs for information and distribution (Muñoz *et al.*, 2014; Shi *et al.*, 2021; Rijal *et al.*, 2024). These findings support Coleman's (1990) social capital theory, where urban networks rely more on formal mechanisms while rural communities depend on social cohesion and embedded institutions.

Network visualization (Figs. 1 & 2) further illustrates these contrasting patterns. In Ajjulukana, centrality is more distributed and supported by the village government, local suppliers, and retail partners. Fatimah Azzahra's network is more concentrated, with the marketing agents acting as dominant connectors. Similar structural distinctions have been observed in rural–urban comparisons in China and Southeast Asia, where decentralized rural networks reflect participatory governance, and urban networks rely on key strategic nodes (Ovazka *et al.*, 2021).

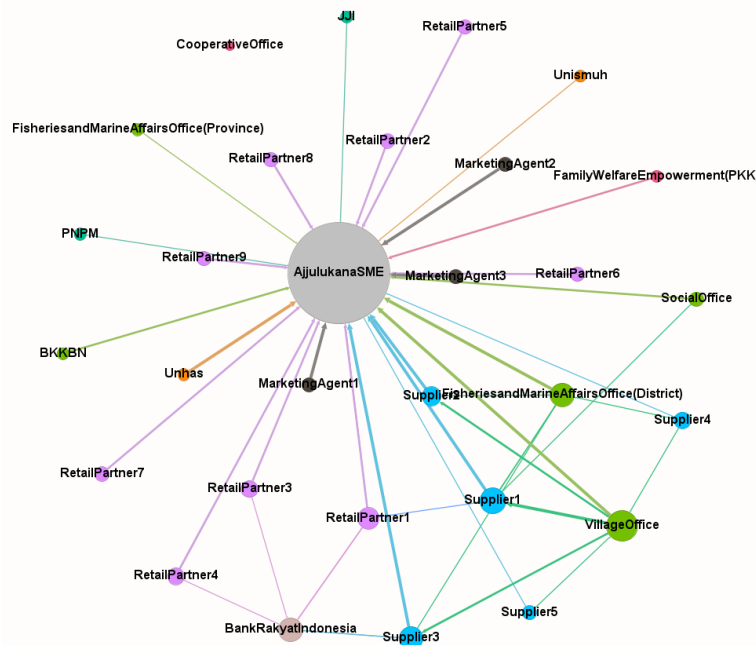


Fig. 1. Business network visualization of the Ajjulukana coastal women's group

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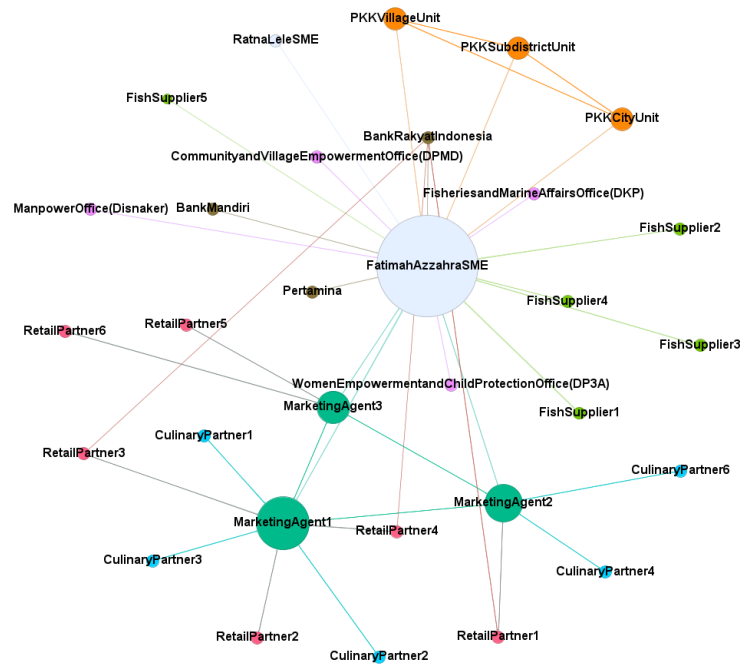


Fig. 2. Business network visualization of the Fatimah Azzahra coastal women's group

In terms of closeness centrality, Ajjulukana (0.62) is the fastest node in accessing the overall network, supported by the Village Office (0.56), Supplier 3 (0.56), and several retail partners. This indicates that rural actors facilitate quicker information flow, consistent with studies that emphasize the inclusivity and speed of horizontally structured rural networks (Ango & Temitope, 2021). On the other hand, Fatimah Azzahra's network shows high closeness at the core node itself, yet depends heavily on marketing agents to maintain connectivity a pattern common in urban MSME ecosystems (Jiang *et al.*, 2021; Esfahani & Akbarzadeh, 2024).

Betweenness centrality analysis identifies Ajjulukana as the key broker (426.7), supported by Retail Partner 1 (98.0), Supplier 1 (64.7), and the Village Office (37.8). This distributed brokerage network promotes resilience and interdependence among multiple actors (Borrás, 2007; Quintane & Carnabuci, 2016). Conversely, the Fatimah Azzahra network is concentrated, with MarketingAgent1 as the primary bridge, reinforcing Burt's (1992) theory of structural holes in Swedberg (1994), where central actors control information and resources across clusters.

Eigenvector centrality results emphasize this dichotomy. Ajjulukana (1.0) maintains its central influence through strong ties with multiple retail partners, reflecting a community-based network where influence is shared. Fatimah Azzahra, while also central, derives most of its structural strength through connections to the two dominant

marketing agents. This confirms the presence of a hierarchical, market-driven structure in the urban context (**Campbell *et al.*, 2021; Adami *et al.*, 2024**).

The business network analysis of two coastal women's groups, Ajjulukana in Takalar Regency and Fatimah Azzahra in Makassar City, reveals a contrast in strategic orientation that reflects the differing rural and urban socioeconomic contexts. Both groups position the group leader as the central node in their respective networks, a common characteristic of trust-based social networks in women's MSME group communities (**Erçetin & Bisaso, 2016; Aliyu *et al.*, 2019; Widia & Octafia, 2023**). However, the sources of network support and the relational patterns formed exhibit different configurations, Ajjulukana is rooted in the local community, whereas Fatimah Azzahra relies on modern market mechanisms. This distinction aligns with recent studies showing that rural MSMEs tend to form trust-based and informal networks, while urban MSMEs are more likely to leverage technology-driven channels and formal institutions to access broader markets (**Goodfellow, 2019; Jensen *et al.*, 2019**).

The Ajjulukana group remains active today, with a growing membership base. The main products include fish floss, fish balls, seaweed balls, and various traditional cakes. The group's primary challenges are marketing and limited access to raw materials. Market and supply chain constraints are common obstacles for women's MSME groups in rural areas, where production and logistical capacities remain limited (**Kour & Yadav, 2024; Bungati *et al.*, 2025**). Business network analysis shows that Ajjulukana functions as a central node with strong connectivity to various actors, including suppliers, government agencies, financial institutions, and retail partners. Studies from Kenya and India also highlight the importance of business network structures and financial literacy in determining the success of women's MSME groups, particularly in informal and highly competitive entrepreneurial ecosystems (**Khalif & Oba, 2018; Kagiri & Muathe, 2023**).

Meanwhile, Fatimah Azzahra group, established in 2014 in Makassar, focuses on fish-based processing businesses, producing items such as fish floss, boneless milkfish, otak otak, and various culinary innovations. Its urban location offers advantages such as better access to modern markets, financial institutions and broader institutional networks. However, it also presents challenges, including dependency on marketing agents and intense competition among MSMEs. Urban women entrepreneurs tend to generate higher profits and enjoy better infrastructure access, but they also face greater market pressure and stiffer competition compared to their rural counterparts (**Lall & Yadav, 2019; Roy & Singh, 2024**).

Overall, these findings illustrate a duality in coastal women's enterprise networks, rural groups operate through solidarity-based, inclusive structures, while urban groups optimize distribution efficiency via formal market agents. Policy interventions must therefore be context-responsive, rural groups need support in capacity-building and institutional access, while urban groups require strategies to reduce dependency on

external intermediaries and diversify their digital and market channels (**Diapopin *et al.*, 2024; Null & Suryani, 2024; Rokhim *et al.*, 2024; Abellana & Alonzo, 2025**). These findings contribute beyond the rural–urban dichotomy by demonstrating how women-led enterprises adapt differently within communitarian and market-driven networks, adding a gendered dimension to fisheries network analysis.

3. Leadership and institutional bridging

The success and resilience of women-led fish processing enterprises in Indonesia are significantly shaped by local leadership and the ability to establish institutional partnerships. Findings from this study show that the group chairperson acts not only as an internal coordinator but also as an external broker bridging members with governmental, financial, and market-based institutions. This dual role is crucial in ensuring both vertical access to resources and horizontal cohesion within the group.

The group leader plays a critical role in mobilizing resources, representing the enterprise in meetings with agencies, and ensuring that the group's needs are articulated and addressed by external stakeholders. Women often mediate conflicts in fisheries resource use, reinforcing social cohesion and sustainability in community-based resource management (**Daris *et al.*, 2024**).

Such findings align with broader research on small-scale fisheries (SSFs), which consistently emphasize the role of local champions in navigating complex institutional landscapes (**Sutton & Rudd, 2016; Abdurrahim *et al.*, 2022; Salmi *et al.*, 2022**). These actors often act as institutional translators, converting bureaucratic language into community-relevant action. In the context of Indonesia's coastal development programs (e.g., POKMASWAS, DKP empowerment schemes), this function is vital to ensure that bottom-up initiatives receive top-down support.

In Makassar's Fatimah Azzahra group, leadership is strongly formalized. The chairperson manages the group's registration, liaises with the Ministry of Fisheries, coordinates halal certification, and manages training schedules. This reflects a leadership-based institutional bridging model, which allows smoother engagement with urban municipal programs and access to formal credit and technical assistance.

In contrast, the Ajjulukana group in Takalar operates within a community-based adaptive leadership model, where coordination is collective and relies on rotating leadership and informal ties to village officials and NGOs. While less formal, this model offers flexibility and deeper community anchoring, a known success factor in rural SSFs (**Hauzer *et al.*, 2013; Zhong *et al.*, 2015; Alexander *et al.*, 2018**).

These dual leadership models suggest that adaptive institutional bridging, not one-size-fits-all leadership, is key to sustainability. Fatimah Azzahra thrives through professionalized engagement, while Ajjulukana sustains itself through embedded community legitimacy. Both are capable of leveraging different institutional networks, but their long-term resilience will depend on continued support from fisheries extension

programs and inclusive policy frameworks (**Mangubhai & Lawless, 2021; Galappaththi *et al.*, 2022**). These contrasting leadership models demonstrate that while urban formalized leadership ensures institutional access but risks dependency, rural adaptive leadership builds trust and flexibility that sustain long-term resilience.

4. Empowerment and gender transformations

The participation of women in coastal fish processing through groups, such as those of Fatimah Azzahra and Ajjulukana, has resulted in tangible shifts in gender dynamics and empowerment within their communities. Women, once confined to post-harvest and domestic roles, are increasingly emerging as entrepreneurs, group leaders, financial managers, and public representatives. This shift reflects broader global trends of gender transformation in small-scale fisheries (SSF), where collective enterprise participation often serves as an entry point for empowerment (**Frangoudes *et al.*, 2019**).

Women's increased involvement in group business activities provides them with opportunities to manage income, participate in decision-making, and gain recognition outside of their households.

In Fatimah Azzahra, women take on visible leadership roles, manage production schedules, engage with buyers, and initiate partnerships with government agencies. In Ajjulukana, while leadership is more distributed, women's participation in collective production and marketing has led to enhanced self-confidence, negotiation capacity, and autonomy, especially in dealing with male-dominated local value chains.

These developments are supported by international research showing that women's empowerment in SSFs often progresses through access to income, control over group resources, and enhanced voice in community-level decision-making (**Torre *et al.*, 2019; Freeman & Svels, 2022**).

However, empowerment is not uniform. In both groups, constraints remain. Some women still rely on male family members for access to capital, legal permissions, or transport. Social norms around childcare, modesty, and domestic priorities also influence the extent to which women can fully commit to enterprise expansion. These findings echo earlier critiques that empowerment is contextual and negotiated, rather than absolute (**Lentisco & Lee, 2015; Gustavsson & Riley, 2018**).

Importantly, both groups demonstrate how collective action becomes a vehicle for transformation, where women mobilize resources, build peer support, and negotiate space in male-dominated fisheries sectors. The groups' ability to formalize business, gain certifications, and engage institutions has increased women's public visibility and legitimacy as economic actors. Beyond the local context, the findings contribute to global development goals, reinforcing SDG 5 by strengthening women's empowerment, SDG 8 by fostering sustainable livelihoods and inclusive economic growth, and SDG 14 by supporting sustainable utilization of marine resources.

CONCLUSION

This study concludes that women-led fish processing enterprises in Indonesia serve as important engines for both economic and social sustainability in coastal fisheries. Through collective action, women not only enhance household incomes and food security but also shift gender norms by taking on leadership and institutional roles. Social network analysis revealed that these enterprises rely on different organizational models, urban groups favor formal, centralized structures, while rural groups leverage kinship-based networks, both of which are vital in sustaining group resilience. However, challenges such as limited access to capital, rigid gender roles, and dependency on a few key actors remain. To strengthen their impact, it is recommended that policymakers institutionalize gender-responsive fisheries programs, support network-based training and digital market access, apply inclusive evaluation tools like SNA, and engage communities in transforming social norms that constrain women's participation. Investing in these groups is not only a gender equity imperative, but also a pathway toward more inclusive and resilient coastal economies.

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REFERENCES

- Abdurrahim, A.; Adhuri, D.; Ross, H. and Phelan, A.** (2022). Community champions of ecosystem services: The role of local agency in protecting Indonesian coral reefs. , 10. <https://doi.org/10.3389/fevo.2022.868218>.
- Abellana, J. and Alonzo, A.** (2025). Distribution Channels and Innovation Strategies as Catalysts for MSME Growth: Insights from Northern Mindanao's Bakery Sector. *American Journal of Social Development and Entrepreneurship*. <https://doi.org/10.54536/ajsde.v4i1.4588>.
- Adami, V.; Ebadi, Z. and Nattagh-Najafi, M.** (2024). A dandelion structure of eigenvector preferential attachment networks. *Scientific Reports*, 14. <https://doi.org/10.1038/s41598-024-67896-9>.
- Alami, A. and Raharjo, S.** (2017). Recognizing Indonesian fisherwomen's roles in fishery resource management: profile, policy, and strategy for economic

- empowerment. *Journal of the Indian Ocean Region*, 13, 40 - 53. <https://doi.org/10.1080/19480881.2016.1275329>.
- Alexander, S.; Bodin, Ö. and Barnes, M.** (2018). Untangling the drivers of community cohesion in small-scale fisheries. *The International Journal of the Commons*, 12, 519-547. <https://doi.org/10.18352/IJC.843>.
- Aliyu, R.; Ahmad, T.; Nordin, N. and Abdullahi, I.** (2019). The Analysis of Social Network on Business Performance of Women: The Mediating Role of Innovation. *International Journal of Academic Research in Economics and Management Sciences*. <https://doi.org/10.6007/ijarems/v8-i1/5589>.
- Ango, R. and Temitope, A.** (2021). Information Flow Assessment for Rural Transformation in Developing Nations. *International Journal of Science and Research (IJSR)*. <https://doi.org/10.21275/sr21609214206>.
- Astuti, R. and Hadiyanto, H.** (2018). Estimating Environmental Impact Potential of Small Scale Fish Processing using Life Cycle Assessment. *Journal of Ecological Engineering*. <https://doi.org/10.12911/22998993/91879>.
- Bagheri, A.; Javadian, G.; Zakeri, P. and Arasti, Z.** (2023). Bearing the Unbearable: Exploring Women Entrepreneurs Resilience Building in Times of Crises. *Journal of Business Ethics*. <https://doi.org/10.1007/s10551-023-05577-9>.
- Borrás, S.** (2007). The European Commission as Network Broker. *Social Science Research Network*.
- Bungati.; Taridala, A.; Lintang, M.; , P.; , W.; Rawung, J.; Susilowati, D.; Indrasti, R.; Santosa, B.; Yulianti, A.; , I.; Suryana, A.; Sitompul, R.; Purba, H.; , S.; Kario, N.; , D.; , R. and Witjaksono, J.** (2025). Developing Strategy for Enhancing Women's Role of Sago Micro, Small and Medium Enterprises (MSMEs) in Rural Area: A Case Study of Gender Issue in Southeast Sulawesi Province. *Academic Journal of Interdisciplinary Studies*. <https://doi.org/10.36941/ajis-2025-0015>.
- Campbell, B.; Warren, K.; Weiler, M. and De Leon, G.** (2021). Eigenvector centrality defines hierarchy and predicts graduation in therapeutic community units. *PLoS ONE*, 16. <https://doi.org/10.1371/journal.pone.0261405>.
- Daris, L.; Massiseng, A.N.A.; Fachri, M.E.; Jaya; Irwansyah; Alpiani and Mustaking, M.** (2024). The role of women in conflict resolution on the utilisation of capture fisheries resources in the coastal area of South Sulawesi. *Journal of Sustainability Science and Management*, 19(9), 20-34. <https://doi.org/10.46754/jssm.2024.09.002>.

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- Diapepin, M.; Febrina, D.; Sunaryo, J.; Astika, Y.; Elsyra, N.; Wismar, T. and , H.** (2024). Building Entrepreneurial Capacity: The Role of Publicly Funded Training Programs in Empowering MSMEs in Dharmasraya, Indonesia. *Indonesian Community Empowerment Journal*. <https://doi.org/10.37275/icejournal.v4i2.61>.
- Díaz-Reviriego, I.; Fernández-Llamazares, Á.; Howard, P.; Molina, J. and Reyes-García, V.** (2017). Fishing in the Amazonian Forest: A Gendered Social Network Puzzle. *Society and Natural Resources*, 30, 690 - 706. <https://doi.org/10.1080/08941920.2016.1257079>.
- Ekayani, I.; Susrusa, K.; Suardi, I. and Putra, I.** (2018). Entrepreneur community prospect of snack made from local food by balinese women. *International Journal of Life Sciences*, 2, 151-163. <https://doi.org/10.29332/ijls.v2n3.237>.
- Erçetin, Ş. and Bisaso, S.** (2016). Women Leadership in Complex Social Media and Social Networking Systems. , 127-142. https://doi.org/10.1007/978-3-319-44758-2_12.
- Esfahani, Z. and Akbarzadeh, M.** (2024). On the importance of adopting a multi-centrality approach to detecting the vital nodes of urban road networks. *Sustainability Analytics and Modeling*. <https://doi.org/10.1016/j.samod.2024.100031>.
- Ferrer, A.; Pomeroy, R.; Akester, M.; Muawanah, U.; Chumchuen, W.; Lee, W.; Hai, P. and Viswanathan, K.** (2021). COVID-19 and Small-Scale Fisheries in Southeast Asia: Impacts and Responses. *Asian Fisheries Science*. <https://doi.org/10.33997/J.AFS.2021.34.1.011>.
- Frangoudes, K.; Gerrard, S. and Kleiber, D.** (2019). Situated transformations of women and gender relations in small-scale fisheries and communities in a globalized world. *Maritime Studies*, 18, 241 - 248. <https://doi.org/10.1007/s40152-019-00159-w>.
- Frantz, T. and Carley, K.** (2016). Reporting a network's most-central actor with a confidence level. *Computational and Mathematical Organization Theory*, 23, 301 - 312. <https://doi.org/10.1007/s10588-016-9229-x>.
- Freeman, R. and Svells, K.** (2022). Women's empowerment in small-scale fisheries: The impact of Fisheries Local Action Groups. *Marine Policy*. <https://doi.org/10.1016/j.marpol.2021.104907>.

- Galappaththi, M.; Armitage, D. and Collins, A.** (2022). Women's experiences in influencing and shaping small-scale fisheries governance. *Fish and Fisheries*. <https://doi.org/10.1111/faf.12672>.
- Goodfellow, T.** (2019). Political Informality: Deals, Trust Networks, and the Negotiation of Value in the Urban Realm. *The Journal of Development Studies*, 56, 278 - 294. <https://doi.org/10.1080/00220388.2019.1577385>.
- Gursida, H.; Herdiyana, H.; Muharam, H.; Pranowo, A.; Hanan, S. and Hadiyat, Y.** (2025). Implementation of Management Practices in MSMEs' Village for Business Performance and Sustainability Improvement: A Case Study in Bantargadung Village, Bantargadung Sub-District, Sukabumi Regency, West Java.. *Jurnal Kabar Masyarakat*. <https://doi.org/10.54066/jkb.v3i1.2930>.
- Gustavsson, M. and Riley, M.** (2018). Women, capitals and fishing lives: exploring gendered dynamics in the Llŷn Peninsula small-scale fishery (Wales, UK). *Maritime Studies*, 17, 223 - 231. <https://doi.org/10.1007/s40152-018-0102-z>.
- Harper, S.; Grubb, C.; Stiles, M. and Sumaila, U.** (2017). Contributions by Women to Fisheries Economies: Insights from Five Maritime Countries. *Coastal Management*, 45, 106 - 91. <https://doi.org/10.1080/08920753.2017.1278143>.
- Hassan, F.; Prathap, S.; Jeeva, J.; Mathew, S. and Babu, R.** (2013). Economic feasibility analysis of fisherwomen based microenterprises. *Indian Journal of Fisheries*, 60.
- Hauzer, M.; Dearden, P. and Murray, G.** (2013). The effectiveness of community-based governance of small-scale fisheries, Ngazidja island, Comoros. *Marine Policy*, 38, 346-354. <https://doi.org/10.1016/J.MARPOL.2012.06.012>.
- Ivanova, G.** (2021). social networks opportunities for sustainable agribusiness development. *Agribusiness And Rural Areas - Economy, Innovation and Growth 2021 Conference Proceedings*. <https://doi.org/10.36997/ara2021.112>.
- Jensen, L.; Tickamyer, A. and Slack, T.** (2019). Rural-urban variation in informal work activities in the United States. *Journal of Rural Studies*. <https://doi.org/10.1016/J.JRURSTUD.2019.02.009>.
- Jiang, S.; Luo, Z.; Yin, Z.; Wang, Z.; Wang, S. and Gao, C.** (2021). Identification of Critical Nodes in Urban Transportation Network Through Network Topology and Server Routes. , 395-407. https://doi.org/10.1007/978-3-030-82136-4_32.
- Kagiri, R. and Muathe, S.** (2023). Market system strategies: Antecedents to financial uptake among women-owned MSMEs in informal settlements in

-
- Kenya. *International Journal of Research in Business and Social Science* (2147-4478). <https://doi.org/10.20525/ijrbs.v12i7.2873>.
- Kagiri, R. and Muathe, S.** (2023). Market system strategies: Antecedents to financial uptake among women-owned MSMEs in informal settlements in Kenya. *International Journal of Research in Business and Social Science* (2147-4478). <https://doi.org/10.20525/ijrbs.v12i7.2873>.
- Kamiyama, R.; Miyata, T.; Ferrer, A.; Kurokura, H. and Ishikawa, S.** (2018). Differences in the effects of social network, trust, and co-operation on fishery co-management. *Marine Policy*, 87, 314-320. <https://doi.org/10.1016/J.MARPOL.2017.10.033>.
- Karim, N.** (2023). innovative processing technologies for sustainable fisheries sectors. *Journal of Sustainability Science and Management*. <https://doi.org/10.46754/jssm.2023.09.001>.
- Khalif, Z. and Oba, G.** (2018). Continuity and Change in Social Networks among Borana Women in Northern Kenya. *Nomadic Peoples*, 22, 249-281. <https://doi.org/10.3197/NP.2018.220205>.
- Kour, G. and Yadav, U.** (2024). inventory management eco- systems and women entrepreneurs in micro, small and medium enterprises in jammu region, jammu and kashmir, india. *ShodhKosh: Journal of Visual and Performing Arts*. <https://doi.org/10.29121/shodhkosh.v5.i1.2024.4821>.
- Kusmantini, T.; Sutiono, H.; Hartati, A.; Robani, A.; Diantoro, A. and Rahmadati, A.** (2025). How do social entrepreneurship factors influence sustainable business development? The mediating role of social network. *Asian Management and Business Review*. <https://doi.org/10.20885/ambr.vol5.iss1.art9>.
- Lall, P. and Yadav, S.** (2019). Empowering Women Entrepreneurs In MSMEs In Rural India – An Exploratory Approach. *Journal of emerging technologies and innovative research*.
- Lanivich, S.; Zahoor, N.; Donbesuur, F.; Miri, D. and Adomako, S.** (2024). Entrepreneurial alertness: A mechanism for innovation and growth in an emerging economy. *Asia Pacific Journal of Management*. <https://doi.org/10.1007/s10490-024-09978-w>.
- Lawless, S.; Cohen, P.; Mangubhai, S.; Kleiber, D. and Morrison, T.** (2021). Gender equality is diluted in commitments made to small-scale fisheries. *World Development*, 140, 105348. <https://doi.org/10.1016/J.WORLDDEV.2020.105348>.

- Lentisco, A. and Lee, R.** (2015). A review of women's access to fish in small-scale fisheries.
- Lohan, S.** (2024). The Role of Geography in Shaping Entrepreneurship: Impacts on Venture Creation, Growth, and Sustainability. *International Journal of Scientific Research in Science and Technology*. <https://doi.org/10.32628/ijrst24115125>.
- Mangubhai, S. and Lawless, S.** (2021). Exploring gender inclusion in small-scale fisheries management and development in Melanesia. *Marine Policy*, 123, 104287. <https://doi.org/10.1016/j.marpol.2020.104287>.
- Materia, V.; Linnemann, A.; Smid, E. and Schoustra, S.** (2021). Contribution of traditional fermented foods to food systems transformation: value addition and inclusive entrepreneurship. *Food Security*, 13, 1163 - 1177. <https://doi.org/10.1007/s12571-021-01185-5>.
- Müller, S. and Korsgaard, S.** (2018). Resources and bridging: the role of spatial context in rural entrepreneurship. *Entrepreneurship and Regional Development*, 30, 224 - 255. <https://doi.org/10.1080/08985626.2017.1402092>.
- Muñoz, M.; Méndez, R. and Munoz, G.** (2014). Different Networks in MSMEs Located in Puebla, Mexico Diferentes Redes Sociales En Las Mipyme Localizadas En Puebla, Mexico, 2, 43-56.
- Neumeyer, X. and Santos, S.** (2018). Sustainable business models, venture typologies, and entrepreneurial ecosystems: A social network perspective. *Journal of Cleaner Production*, 172, 4565-4579. <https://doi.org/10.1016/J.JCLEPRO.2017.08.216>.
- Null, S. and Suryani, D.** (2024). Institutional Capacity of Msme Based on Local Potential: A Case Study in Girikerto, Turi, Sleman. *International Journal of Economic Behavior and Organization*. <https://doi.org/10.11648/j.ijebo.20241203.15>.
- Ovaska, U.; Vihinen, H.; Oostindie, H.; Farinós, J.; Hrabar, M.; Kilis, E.; Kobal, J.; Tisenkopfs, T. and Vulto, H.** (2021). Network Governance Arrangements and Rural-Urban Synergy. *Sustainability*. <https://doi.org/10.3390/SU13052952>.
- Paillin, D.B.; Machfud; Hardjomidjojo, Hardtrisari and Romli, Muhammad.** (2025). Analysis of tuna loin agroindustry supply chain configuration: Case study in Maluku Province, Indonesia. *Egyptian Journal of Aquatic Biology and Fisheries*, 29(1), 135–150.
- Phukrongpet, P.; Daovisan, H. and Satsanasupint, P.** (2021). What drives an innovative behaviour of sustainable community-based enterprises? Insights from a

-
- qualitative case study. *International Journal of Innovation Science*. <https://doi.org/10.1108/ijis-02-2021-0028>.
- Purcell, S.; Tagliafico, A.; Cullis, B. and Gogel, B.** (2021). Socioeconomic impacts of resource diversification from small-scale fishery development. *Ecology and Society*, 26. <https://doi.org/10.5751/ES-12183-260114>.
- Purwanti, A.; Mahfud, M.; Wibawa, K. and Natalis, A.** (2022). The policy of gender mainstreaming in fishing communities for poverty reduction. *Journal of Governance and Regulation*. <https://doi.org/10.22495/jgrv11i4siart7>.
- Quintane, E. and Carnabuci, G.** (2016). How Do Brokers Broker? Tertius Gaudens, Tertius Iungens, and the Temporality of Structural Holes. *Organ. Sci.*; 27, 1343-1360. <https://doi.org/10.1287/orsc.2016.1091>.
- Qulubina, G.S.; Wiyono, E.S and Nurani, T.W.** (2025). The potential of fishermen's wives as transformation agents in the empowering of family income in Tegal, Indonesia. *Egyptian Journal of Aquatic Biology and Fisheries*, 27(5).
- Rana, M.; Mohibbullah, M.; Won, N.; Baten, M.; Sohn, J.; Kim, J. and Choi, J.** (2021). Improved Hot Smoke Processing of Chub Mackerel (*Scomber japonicus*) Promotes Sensorial, Physicochemical and Microbiological Characteristics. *Applied Sciences*. <https://doi.org/10.3390/APP11062629>.
- Rijal, S.; Utomo, B. and Ramdhani, R.** (2024). The Influence of Social Capital on Entrepreneurial Success: A Study of Networks and Relationships in MSMEs. *International Journal of Business, Law, and Education*. <https://doi.org/10.56442/ijble.v5i2.678>.
- Rokhim, A.; Sholeh, M.; Saing, D.; Produk, I.; Digital, P.; Manajemen, S. and Bisnis, U.** (2024). Business Management Strategies to Enhance MSME Competitiveness. *Indonesian Economic Review*. <https://doi.org/10.53787/iconv.v4i2.45>.
- Roy, A. and Singh, S.** (2024). Exploring quality of life disparities: A comparative investigation of rural and urban women entrepreneurs. *Journal of Ecophysiology and Occupational Health*. <https://doi.org/10.18311/jeoh/2024/43500>
- Rupasingha, A. and Contreras, S.** (2014). Factors Affecting Spatial Variation of Microenterprises in the Rural United States. , 7, 17.
- Salmi, P.; Linke, S.; Siegrist, N. and Svets, K.** (2022). A new hope for small-scale fisheries through local action groups? Comparing Finnish and Swedish

- experiences. *Maritime Studies*, 21, 309 - 323. <https://doi.org/10.1007/s40152-022-00269-y>.
- Shi, S.; Wong, S. and Zheng, C.** (2021). Network capital and urban development: an inter-urban capital flow network analysis. *Regional Studies*, 56, 406 - 419. <https://doi.org/10.1080/00343404.2021.1955098>.
- Smith, A. and McColl, J.** (2016). Contextual influences on social enterprise management in rural and urban communities. *Local Economy: The Journal of the Local Economy Policy Unit*, 31, 572 - 588. <https://doi.org/10.1177/0269094216655519>.
- Suci, N.; Ariasih, M.; Dewanti, M.; Atidira, R. and Pratama, P.** (2025). Creative Economy-Based Marketing Innovation Strategy to Increase the Competitiveness of Women's MSMEs. *International Journal of Research and Review*. <https://doi.org/10.52403/ijrr.20250441>.
- Suciptaningsih, O.; Prajanti, S.; Setyowati, D. and Priyanto, A.** (2020). Community Based Entrepreneurship in Coastal Communities: The Impact on the Environment and Economic Empowerment. . <https://doi.org/10.4108/eai.29-6-2019.2290391>.
- Suharnanik, S. and Putri, R.** (2023). Empowering Women Through Social Entrepreneurship Cooperatives for Women. *Proceedings of Sunan Ampel International Conference of Political and Social Sciences*. <https://doi.org/10.15642/saicopss.2023.1..89-94>.
- Sutton, A. and Rudd, M.** (2016). Factors Influencing Community Fishers' Leadership Engagement in International Small-Scale Fisheries. *Frontiers in Marine Science*, 3. <https://doi.org/10.3389/fmars.2016.00116>.
- Swedberg, R.** (1994). Book Reviews: Networks : Ronald S. Burt: Structural Holes: The Social Structure of Competition. Cambridge: Harvard University Press, 1992. *Acta Sociologica*, 37, 426 - 428. <https://doi.org/10.1177/000169939403700410>.
- Torre, J.; Hernández-Velasco, A.; Rivera-Melo, F.; Lopez, J. and Espinosa-Romero, M.** (2019). Women's empowerment, collective actions, and sustainable fisheries: lessons from Mexico. *Maritime Studies*, 18, 373 - 384. <https://doi.org/10.1007/s40152-019-00153-2>.
- Torre-Castro, M.** (2019). Inclusive Management Through Gender Consideration in Small-Scale Fisheries: The Why and the How. *Frontiers in Marine Science*, 6. <https://doi.org/10.3389/FMARS.2019.00156>.

Widia, E. and Octafia, S. (2023). The role of social capital for the development of women's enterprises: A case study of MSMEs in Padang City. *Optimum: Jurnal Ekonomi dan Pembangunan*. <https://doi.org/10.12928/optimum.v13i2.8693>.

Zhong, L.; Yang, Y.; Xie, B.; Luo, D. and Lin, M. (2015). Research on the Informal Institutional Changes' Impact on the Governance of the Small-scale Rural Public Resource-Taking the Well Governance of L Village as an Example, 62-67. <https://doi.org/10.2991/MSMI-15.2015.12>.