

V's Diamond: An Innovative Framework for Assessing the Competitive Advantages of Fish Processing Industry Clusters in Archipelagic Regions

Ariviana Lientje Kakerissa

Industrial Engineering Department, Faculty of Engineering, Pattimura University, Ambon 97234

E-mail: ariviana.kakerissa@lecturer.unpatti.ac.id

Abstract The fish processing sector on Ambon Island faces significant challenges in strengthening its competitiveness in both domestic and international markets. This study introduces the V's Diamond model, an adaptation of Porter's Diamond that integrates social capital as a key element in assessing the competitiveness of fish processing industry clusters in archipelagic regions. The research aims to develop and apply this model to Ambon Island, evaluating its relevance and implications for small island economies. A mixed-methods approach was employed, combining interviews with industry stakeholders, government representatives, and trade associations with an extensive literature review. Findings highlight the critical role of infrastructure, raw material availability, government policies, and social capital in enhancing the competitiveness of the fish processing industry cluster. The incorporation of social capital within the V's Diamond framework emphasizes the importance of collaboration in driving efficiency and innovation. Based on these insights, the study offers strategic recommendations to strengthen the fish processing industry on Ambon Island and explores the model's broader applicability to other archipelagic regions.

Keywords: : *V's Diamond Model, Social Capital, Competitive Advantages, Archipelagic Regions, Industry Clusters.*

1. INTRODUCTION

Archipelagic regions' economies are heavily reliant on the fish processing, including Ambon Island. As a prominent fish processing center in Eastern Indonesia, the sector holds significant potential to enhance the welfare of coastal communities and fortify the national fisheries supply chain. However, the competitiveness of the fish processing industry in Ambon Island continues to face numerous challenges, including infrastructure deficiencies, restricted market access and an absence of effective coordination among industry stakeholders.

A widely utilized framework for analyzing the competitive advantage of industry clusters is Michael Porter's Diamond Model (1990), which identified four critical determinants that influence industry competitiveness: factor conditions, demand conditions, related and supporting industries, and firm strategy, structure, and rivalry [1]. While this model provides a solid analytical framework, it exhibits certain limitations, particularly when applied to resource-based industry clusters in archipelagic regions.

Critics of Porter's Diamond Model highlight several key shortcomings, especially in the context

of resource-dependent and island-based industries. Notably, the model does not account for the significance of social capital—defined as the networks, trust, and collaboration among industry actors, which serves a vital function in strengthening relationships within community-based industry clusters. Previous research has emphasized the critical significance of social capital in fostering collaboration among organizations, particularly within industries that rely on local resources. Moreover, social capital facilitates collective action within communities, a critical factor for sustainable development and social empowerment [2-4].

Furthermore, Porter's Diamond Model is typically more applicable to industries driven by innovation and technology, whereas resource-based industries, such as fish processing, are more reliant on factors such as raw material availability and supply chain efficiency. This discrepancy is underscored by the view that fishing communities are often marginalized in the face of modernization and globalization, despite their essential role in local livelihoods [5]. Additionally, cultural values focused on growth can promote stronger collaboration between stakeholders in the supply chain, thereby improving overall industry

performance [6-8]. Furthermore, [9] notes that the fisheries industry faces unique supply chain challenges, including fluctuations in demand and natural constraints, which cause significant variability in catch volume and timing, particularly during the initial phases of the supply chain.

The specific challenges faced by archipelagic regions—such as limited logistics infrastructure, difficult market access, and heavy reliance on government policies—further exacerbate the competitiveness of the local fish processing sector. These geographical conditions, which are crucial to the industry’s success, are not adequately addressed in Porter model, which is designed for industries with more integrated geographical conditions. According to [10], geographical factors significantly influence transportation development and shape the exploitation of natural resources, as well as the availability of infrastructure and human resources.

To address these limitations, this study introduces the V’s Diamond model, a modified version of Porter’s Diamond, which incorporates social capital as a central element for enhancing the competitiveness of industry clusters. Developed through the author’s dissertation, the V’s Diamond model derives its name from both the author’s personal nickname and the visual shape of the model, which resembles the letter “V.” In this model, social capital encompasses the relationships, trust, and collaborative networks among industry stakeholders, which together strengthen the overall business ecosystem within the cluster. The inclusion of social capital is intended to significantly enhance the competitiveness of resource-dependent industries, particularly those operating in archipelagic regions.

The aim of this study is to apply the V’s Diamond model to assess the competitive advantage of fish processing industry clusters on Ambon Island, with a specific emphasis on the function of social capital in facilitating collaboration among industry stakeholders. Additionally, the study will provide strategic recommendations to enhance the competitiveness of the fish processing industry in both local and global markets.

This research is anticipated to make both academic and practical contributions. Academically, it will enrich the theoretical framework of industrial cluster analysis by incorporating social capital into the evaluation of competitive advantage and offer a new method for comprehending the competitiveness of resource-based industries in archipelagic regions. Practically, it will provide strategic insights for stakeholders in the fish processing industry on

Ambon Island, offering recommendations to improve competitiveness, and inform policymakers in crafting regulations that aid in the growth of industrial clusters in archipelagic areas.

2. METHODOLOGY

This study utilizes a mixed-methods approach, integrating both qualitative and quantitative methodologies to examine the competitive dynamics of the fisheries processing industry cluster on Ambon Island through the V’s Diamond model. The dual approach was chosen to offer a thorough examination of the determinants that influence the competitive advantage of the fisheries sector, drawing from both descriptive and numerical data.

The qualitative component of the study is aimed at exploring the social dynamics and interactions between key stakeholders within the industry, including government representatives and industry associations, that contribute to the sustainability of the cluster. This aspect of the research incorporates comprehensive interviews, focus group discussions (FGDs), and systematic document analysis, including industry reports. The quantitative element is employed to quantify key variables outlined in the V’s Diamond model, such as infrastructure availability, market access, and aspects of social capital. These variables are measured through surveys and statistical data, offering a more empirical understanding of the factors influencing the competitiveness of the fisheries processing industry in Ambon Island. The combination of these methodologies provides a more holistic view of the various determinants affecting the industry’s competitiveness.

Primary data for this research is obtained directly from stakeholders involved in the fisheries processing industry cluster, including industry participants, government officials, and representatives from industry associations. The data collection methods include conducting in-depth interviews with fish processing entrepreneurs, fishers, distributors, as well as government and association representatives to gain insights into the social dynamics and challenges present within the cluster. FGDs are also held to explore the level of collaboration among industry actors and to assess the role of social capital in enhancing industry competitiveness.

Secondary data utilized in this research consists of a comprehensive literature review of existing studies on industrial cluster theory, competitive advantage, and the fisheries sector, particularly focusing on resource-based industries. In addition,

industry reports, including annual reports, market studies, and publications from relevant government agencies and organizations pertaining to the fisheries industry in Ambon and Maluku, are analyzed to provide additional context.

The V's Diamond Model serves as the principal analytical framework for examining the competitive advantage of the fisheries processing industry cluster on Ambon Island. The model's key components are as follows:

1. **Factor Conditions:** This involves an evaluation of the availability and quality of human capital, infrastructure, and technological resources within the fisheries processing industry in Ambon Island.
2. **Demand Conditions:** This section assesses both domestic and international market demand trends for processed fish products originating from Ambon Island.
3. **Related and Supporting Industries:** The focus here is on analyzing the fisheries industry's supply chain, including the role of raw material suppliers and the contribution of related industries such as transportation and logistics.
4. **Firm Strategy, Structure, and Rivalry:** This component explores the business strategies employed by firms within the fisheries industry cluster and examines the nature of competition within the sector.
5. **Government:** This section evaluates the impact of government policies, regulations, and support mechanisms on the development and competitiveness of the fisheries processing industry cluster on Ambon Island.
6. **Opportunities:** This component explores external factors that could potentially enhance the competitiveness of the fisheries processing sector, such as emerging market trends, technological innovations, and opportunities in international trade.
7. **Social Capital:** This key element measures the relationships and levels of trust between industry actors, as well as the degree of collaboration among businesses, government entities, and local communities within the industrial ecosystem.

Each of these components will be analyzed in detail to assess its effect on the competitiveness of the fisheries processing industry cluster in Ambon Island. Additionally, the study will incorporate a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis to further enrich the examination. The SWOT analysis will identify the internal strengths and weaknesses of the fisheries processing industry in Ambon Island, alongside the external

opportunities and threats that may influence its competitive position. This analysis will contribute to a deeper understanding of the industry's strategic positioning and the external factors affecting the long-term sustainability of the cluster.

3. RESULTS AND DISCUSSION

3.1 Evaluation of Competitive Advantage Using the V's Diamond Model

The analysis of the competitive advantage of the fisheries processing industry cluster on Ambon Island is presented through the lens of the V's Diamond model. The key findings are structured according to the model's elements, which are represented in Figure 1.

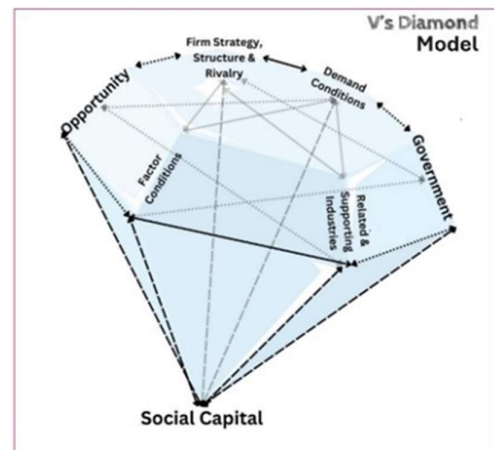


Figure 1. V's Diamond Model

- **Factor Conditions**
The availability of essential infrastructure—such as ports, roadways, and processing facilities—plays an important role in improving the efficiency of the production process. While certain regions of Ambon Island are equipped with adequate infrastructure, significant challenges persist regarding accessibility and infrastructure quality, necessitating improvements to facilitate the smooth distribution of products. Labor quality is another important determinant of product standards in the fisheries sector. There is a pressing need for more targeted training and skills development programs to elevate workforce competencies and thus, the industry's competitiveness. Moreover, the abundance of marine resources represents a distinct advantage for the fisheries industry on Ambon Island. However, challenges such as seasonal fluctuations in supply and deterioration in raw material quality pose risks to production

stability, indicating a need for robust supply chain management strategies [11-13].

- Demand Conditions

Domestic demand for fishery products is relatively stable but constrained by limited purchasing power among the local population. Conversely, international markets present substantial growth potential, particularly for premium processed fish products. Gaining access to these markets, however, requires significant improvements in product quality, packaging, and distribution systems to align with international standards[14].

- Firm Strategy, Structure, and Rivalry

The fisheries processing industry on Ambon Island is largely dominated by the production of smoked and frozen fish, leading to a narrow product range. This market structure fosters intense competition among local producers but also presents opportunities for product innovation and differentiation to add value. Larger firms enjoy economies of scale, which provide them with a competitive advantage, while small- and medium-sized enterprises (SMEs) constitute the majority of industry players. The enduring sustainability and competitive advantage of these SMEs are largely contingent upon maintaining consistent product quality and developing strong relationships with raw material suppliers and consumers [15-18].

- Related and Supporting Industries

The fisheries processing industry on Ambon Island faces multiple challenges related to its supply chain, particularly concerning the stability of raw material supply and logistical infrastructure. Underdeveloped cold storage facilities and inadequate transportation systems exacerbate price volatility and fluctuations in raw material quality. Moreover, marketing and logistics represent major bottlenecks; the distribution of processed fishery products to both domestic and international markets is hindered by inefficiencies in the logistics system. Additionally, marketing efforts remain limited to existing networks, highlighting the need for more structured, digital marketing strategies to expand market reach and improve the industry's competitiveness [19-22].

- Government

The Indonesian government has implemented policies aimed at supporting the development of the fisheries industry, such as port revitalization initiatives and the provision of incentives for industry stakeholders. However, the regulatory

framework for the fisheries sector on Ambon Island still requires further alignment with industry practices to enhance efficiency and foster greater competitiveness. Inconsistent policy implementation and overlapping regulations have created administrative bottlenecks, slowing down industry growth. Moreover, limited access to financial resources and technical support hampers the ability of small and medium-sized enterprises (SMEs) to scale up their operations. Addressing these regulatory and structural challenges through policy harmonization and targeted capacity-building programs is essential for ensuring long-term sustainability and competitiveness in the fisheries sector [23-24].

- Opportunities

The fisheries processing industry cluster on Ambon Island possesses considerable opportunities to strengthen its competitive position. The global market is becoming increasingly accessible due to rising demand for sustainable fishery products, coupled with free trade agreements that facilitate export opportunities. Government policies continue to play a crucial role, with initiatives that support the fisheries industry and improve logistical infrastructure—particularly in transportation and port access—thereby enhancing distribution efficiency. Technological innovations, such as advanced processing systems, the digitalization of supply chains, and technology-driven marketing strategies, offer potential for improving product quality. The island's abundant natural resources, including fish, shrimp, and seaweed, present opportunities for value-added product diversification. Furthermore, Ambon's natural beauty provides a foundation for eco-tourism initiatives and sustainable product marketing. Changing consumer preferences, particularly a growing demand for sustainable fishery products, create an opportunity for local industries to adopt environmentally responsible production methods. Additionally, the strengthening of social capital through increased collaboration with industry associations and social organizations can improve industrial networks, enhance production efficiency, and broaden market access [25-25].

- Social Capital

Social capital is a critical factor in the success of the fish processing industry cluster on Ambon Island. The mutually supportive relationships among entrepreneurs, fishermen, the

government, and local communities provide a solid basis for sustainable collaboration. However, there is a need to further develop trust and transparency among industry participants to fully harness the potential of social capital in improving the competitiveness of the cluster. Additionally, fostering capacity-building through knowledge exchange and joint innovation could enhance the cooperation among stakeholders. Findings from the field suggest that the level of trust between fishermen and fish processing entrepreneurs, particularly in the smoked fish small and medium-sized industry (SMI), is exceptionally strong. A clear example of this is seen when entrepreneurs face capital shortages and cannot afford to purchase fresh fish; fishermen are willing to provide fish on credit, trusting that they will be paid once the smoked fish products are sold or once profits are made. This high level of trust not only ensures the continuity of operations in the fish processing industry but also cultivates a collaborative environment that strengthens the cluster's resilience and adaptability. With the appropriate policy support and active participation from all stakeholders, this industry cluster has the potential to become even more adaptive and sustainable in response to global market shifts [29-30].

3.2 Comparison between V's Diamond and Porter's Diamond

Porter's Diamond model has both strengths and limitations when applied to the analysis of the fisheries processing industry on Ambon Island. While it emphasizes macroeconomic factors such as production conditions and market demand, it fails to adequately account for the role of social capital, which is particularly significant in island-based industrial clusters. Within the context of Ambon's fisheries processing sector, the social interactions and collaborative efforts among industry stakeholders play a decisive role in enhancing competitiveness, a factor that is not fully addressed in Porter traditional framework.

In response to this gap, the V's Diamond model introduces social capital as an additional element, providing a more comprehensive and contextually relevant perspective for industries situated in archipelagic regions. The model emphasizes how relationships among industry participants, whether between producers, suppliers, or government agencies, are critical for fostering a more sustainable and competitive cluster system. The inclusion of

social capital in the V's Diamond model has proven beneficial in enhancing the competitiveness of the fisheries processing industry on Ambon Island. Strong partnerships between fishers and processors, along with collaborative efforts between the private sector and government, have led to a more resilient business ecosystem. Social capital fosters knowledge exchange, enhances market access, and strengthens distribution networks, collectively boosting the sector's competitiveness.

3.3 Social Capital Influences in Enhancing the Competitiveness of the Fisheries Industry on Ambon Island

Social capital is crucial for increasing competitiveness of the fisheries industry on Ambon Island. Trust, social networks, and collaboration among industry participants contribute to production efficiency, supply chain stability, and broader market access. In a SWOT analysis, social capital can be categorized as both a Strength and an Opportunity for industry development, although it also presents certain Weaknesses and Threats that require careful management.

1. Strengths: Advances of Social Capital in the Fisheries Industry Cluster

The fisheries industry cluster benefits significantly from social capital, which is evident through the following key strengths:

- **Strong Networks and Partnerships:** Effective collaboration among fishers, processors, and distributors facilitates efficient communication and coordination throughout the production and distribution process.
- **Community Trust and Solidarity:** The prevailing culture of mutual cooperation and collaboration among industry participants helps to streamline supply chain operations and promote product innovation.
- **Government and Institutional Support:** Empowerment initiatives, such as cooperatives and joint business groups (KUB), further strengthen the role of social capital in sustaining industry development.

2. Weaknesses: Challenges in Leveraging Social Capital

Despite the strong foundation of social capital, several weaknesses hinder its full potential in the fisheries industry cluster:

- **Lack of Effective Formal Organizations:** Although strong social relationships exist, cooperatives and associations have yet to fully

optimize their potential in enhancing industry competitiveness.

- **Limited Knowledge Transfer and Innovation:** Insufficient structured educational and training opportunities constrain the adoption of new technologies and innovative practices within the sector.

3. Opportunities: Enhancing Social Capital to Improve Competitiveness

Several opportunities exist for strengthening social capital to boost the competitiveness of the fisheries industry:

- **Digital Technology Utilization:** The integration of digital platforms can enhance marketing networks, streamline supply chain operations, and expand market access, both domestically and internationally.
- **Regulatory Support:** Government programs that promote the fisheries industry and encourage community-based empowerment initiatives provide significant opportunities to strengthen social capital.

4. Threats: External Factors Impeding Social Capital Enhancement

Several external factors present threats to the strengthening of social capital within the fisheries industry cluster:

- **Lack of Innovation and Modernization:** Business management practices that fail to innovate risk falling behind competitors in more advanced regions.
- **Competition from More Advanced Producers:** Larger, better-capitalized competitors from other regions provide substantial issues for small and medium-sized organizations (SMEs) in Ambon Island.

A weighted analysis of the impact of social capital on the SWOT factors (Strengths, Weaknesses, Opportunities, and Threats) provides further insights into its influence on the competitiveness of the fisheries processing industry. Findings from this study are shown in Table 1.

Table 1. Weighted Analysis of SWOT Factors

SWOT Factor	Weight	Rating	Score Weight x Rating
Strengths (S)			
Strong Partnership Network	0.30	4	1.20
Community Trust and Solidarity	0.25	3	0.75

SWOT Factor	Weight	Rating	Score Weight x Rating
Government and Institutional Support	0.20	4	0.80
Weaknesses (W)			
Lack of Effective Formal Organizations	0.35	2	0.70
Limited Knowledge Transfer and Innovation	0.30	2	0.60
Opportunities (O)			
Digital Technology Utilization	0.40	4	1.60
Regulatory Support	0.35	3	1.05
Threats (T)			
Lack of Innovation and Modernization	0.30	2	0.60
Competition from More Advanced Producers	0.40	2	0.80

The score calculation results show the following:

- Total score of internal factors (S - W):
 - (S) = 1.20 + 0.75 + 0.80 = 2.75
 - (W) = 0.70 + 0.60 = 1.30
 - Total IFE (S - W) = 2.75 - 1.30 = +1.45
- Total score of external factors (O - T):
 - (O) = 1.60 + 1.05 = 2.65
 - (T) = 0.60 + 0.80 = 1.40
 - Total EFE (O - T) = 2.65 - 1.40 = +1.25

These results indicate that the cluster has a strong foundation and many opportunities for growth.

3.4 Strategies for Enhancing Social Capital in the Fisheries Industry Cluster

Building upon the SWOT analysis, a variety of strategies can be employed to fortify social capital within the fisheries processing industry on Ambon Island:

1. SO Strategy (Strength-Opportunity)

The SO (Aggressive) strategy aims to capitalize on the internal strengths of the industry while seizing external opportunities. A fundamental component of this strategy involves the digitization of marketing networks to extend market reach, leveraging the existing trust embedded in social capital. Implementing this strategy entails utilizing digital platforms, such as social media and e-commerce sites, to promote

local products with the support of fishing communities and entrepreneurs. A community-based approach will ensure the development of a more inclusive and sustainable business model. Additionally, it is crucial to optimize government policies to enhance the role of cooperatives, thereby improving industry competitiveness. This strategy is expected to broaden the market reach of fisheries products, both domestically and internationally, thereby boosting the welfare of industry stakeholders and strengthening the cluster's position in the global value chain.

2. **WO Strategy (Weakness-Opportunity)**

The WO (Turnaround) strategy addresses internal weaknesses while leveraging external opportunities through the promotion of collaboration and capacity-building within the fisheries processing industry cluster. A key initiative is formalizing cooperation among industry participants by establishing well-structured associations. With the backing of government-supported training and mentorship, these collaborations can enhance operational efficiency and expedite the adoption of new technologies. Furthermore, expanding training and educational programs for industry stakeholders is essential to overcoming knowledge transfer limitations. Continuous professional development will ensure the enhancement of workforce skills and overall sector competitiveness. Additionally, the establishment of robust institutions is important to ensure the long-term sustainability of social capital within the cluster. A solid institutional foundation will provide better access to resources and supportive policies, facilitating the sustainable development of the fisheries processing industry. This strategy is expected to enhance industrial efficiency, accelerate the integration of new technologies, and strengthen human resource capacity and resource accessibility.

3. **ST Strategy (Strength-Threat)**

In response to increasing competition, the fisheries processing industry cluster must reduce its reliance on traditional business models by implementing the ST (Diversification) strategy, which focuses on fostering stronger partnerships. A key initiative in this strategy is promoting innovation in processed fishery products through the active involvement of various stakeholders in production and distribution processes. This approach will lead to product differentiation, thereby improving the competitiveness of local

industries. Additionally, leveraging strong social networks can improve the bargaining power of local industries in the face of market pressures. By cultivating a community-based business ecosystem, the fisheries industry can enhance collaboration and expand its market reach. Furthermore, fostering community-driven innovation is crucial for developing value-added products that can compete effectively in both domestic and international markets. The expected outcome of this strategy is that the fisheries processing industry will become more adaptable to market changes, thereby reinforcing its competitive edge and driving sustainable economic growth.

4. **WT Strategy (Weakness-Threat)**

To mitigate internal weaknesses and external threats, the fisheries processing industry cluster must reduce its dependence on traditional markets and business practices by enhancing capacity and quality through increased collaboration, as outlined in the WT (Defensive) strategy. A crucial initiative involves enhancing the efficiency of the distribution system, both locally and internationally, to expand market access and ensure the stability of production processes. Additionally, adopting advanced technology in production and distribution is a strategic solution for improving operational efficiency and competitiveness. By incorporating modern technologies, businesses can optimize production workflows, reduce waste, and enhance product quality. Establishing trust and communication mechanisms among industry participants is also crucial to maintaining the stability of social capital over the long term. Through improved coordination, the industry can create a stronger and more resilient business ecosystem capable of withstanding market fluctuations. The anticipated outcome of this strategy is that the fisheries processing industry will become more adaptive, competitive, and better positioned to sustain itself in an ever-changing market environment.

3.5 Strategic Implications for the Competitiveness of Fisheries Processing Industry Clusters in Archipelagic Regions

Based on the comparative evaluation of various models, several strategic recommendations can be put forward to improve the competitiveness of the fisheries processing industry cluster on Ambon Island:

1. Infrastructure Development

The improvement of infrastructure is of paramount importance, particularly the enhancement of storage and transportation facilities, which are essential for ensuring a stable supply of raw materials and facilitating efficient product distribution. Additionally, the development of digital infrastructure, such as real-time supply chain monitoring systems, can enhance logistics efficiency and mitigate the risk of distribution delays. The establishment of modern storage facilities, such as cold storage units with advanced temperature control technology, will help preserve the quality of both raw materials and final products. In terms of transportation, strengthening connectivity between production hubs and markets through integrated sea, land, and air routes will accelerate deliveries and reduce logistics costs. Collaborative efforts among governmental entities and the private sector are crucial for investing in this infrastructure to create a sustainable, competitive system. This will enable the industry to operate more efficiently and meet market demands [31-32].

2. **Workforce Quality Enhancement**

Improving workforce quality is vital through the provision of continuous training and education to equip workers with the necessary skills to support efficient and innovative production processes. In addition to technical training, strengthening soft skills such as time management, teamwork, and problem-solving is equally important to ensure adaptability in the face of industry dynamics. The implementation of certification programs and the standardization of competencies will help ensure that workers meet industry standards. Furthermore, collaborations between universities, training institutions, and businesses can assist in developing curricula that are both relevant and practical. Integrating of technology into training, such as e-learning platforms and digital simulations, can further accelerate the development of workforce skills. A highly skilled and innovative workforce will enhance industry competitiveness, leading to greater productivity and efficiency [33-34].

3. **Enhancing Collaboration Among Industry Stakeholders**

Strengthening collaboration among industry participants, including fishers, entrepreneurs, and government officials—is essential to foster more productive partnerships. Through closer cooperation, the exchange of information and technology will occur more effectively, enabling

fishers and entrepreneurs to adopt the best practices in production and distribution. The role of the Government is pivotal in providing favorable regulations and incentives to encourage collaboration. Furthermore, establishing communication forums and networking platforms will facilitate regular dialogue on industry challenges and opportunities. The utilization of social capital, such as trust and established community norms, will bolster coordination within the supply chain and enhance operational efficiency. With strong partnerships, the industry will be able to grow sustainably and generate broader economic benefits for all stakeholders involved [35-38].

4. **Product Diversification**

Product Diversification is essential for developing a broader range of processed fish products, which will expand market share both domestically and internationally, thereby improving overall industry competitiveness. Innovations in processing techniques can result in higher-value products, such as ready-to-eat seafood meals, functional fish-based products, or long-lasting seafood snacks. Diversification could also include the development of eco-friendly products, such as biodegradable packaging or the utilization of fish by-products for value-added products like animal feed or collagen. By aligning products with consumer preferences across various market segments, the fisheries processing industry will become more adaptable to market demand fluctuations. The adoption of modern processing technologies, coupled with comprehensive market research, will also help produce competitive products that meet international standards. A successful product diversification strategy will allow the fish processing industry to expand export opportunities and enhance the welfare of industry stakeholders across the value chain [39-43].

4. **CONCLUSION**

Several key conclusions can be drawn from this study. First, the V's Diamond Model, which incorporates social capital as a central element, is more appropriate for analyzing resource-based and archipelagic industrial clusters than the traditional Porter's Diamond Model. By integrating social capital as a core driver of competitiveness, this model provides a more holistic understanding of the dynamics within industrial clusters in archipelagic regions. Second, the competitiveness of the fisheries processing industry on Ambon Island is influenced

by several critical factors: adequate infrastructure to support production processes and distribution, abundant raw materials and product diversity, social capital that facilitates collaboration among industry stakeholders, and the government's role in formulating policies and regulations that promote sustainable industry development.

To enhance competitiveness, it is crucial for the fisheries processing industry cluster on Ambon Island to focus on strengthening relationships among industry participants, improving workforce quality, and developing infrastructure that supports sustainable production and distribution. The government has a critical role in developing policies that foster the growth of marine and archipelagic industrial clusters. Policies that encourage public-private partnerships and provide sufficient infrastructure will significantly enhance the cluster's competitiveness in both domestic and global markets.

Several strategic recommendations can be made to bolster the competitiveness of the fish processing industry cluster on Ambon Island, which could also serve as a model for similar industries in other archipelagic regions. First, partnership between governmental institutions and industry stakeholders is essential to enhance supporting infrastructure, such as cold storage facilities, ports, and transportation networks, to facilitate efficient product distribution and maintain raw material quality. Second, social capital should be prioritized in efforts to improve industry competitiveness. Strengthening collaboration among stakeholders, including fishers, entrepreneurs, and the government—through discussion forums and strategic partnerships will expedite decision-making and drive innovation. Third, the fisheries processing industry on Ambon Island should focus on the development of new processed products to expand the market reach both domestically and internationally. Innovations in high-end processed fish products and improved packaging techniques will enhance industry competitiveness. Fourth, the implementation of continuous training programs and vocational education initiatives related to fisheries and seafood processing should be promoted to support efficient, high-quality production processes. Finally, academic researchers and institutions can play a vital role in offering research-driven solutions to the challenges faced by industry. Collaboration between industry and academia will accelerate innovation and lead to improvements in production techniques and industrial management.

Future research could further test the V's Diamond Model on fish processing industry clusters in other archipelagic regions to validate the model's applicability in different local and regional contexts. Additionally, employing quantitative methods, such as regression analysis or structural modeling, could offer a more profound understanding into the impact of social capital on industrial cluster competitiveness, thereby offering a more deeper and more sophisticated comprehension of the dynamic interplay between social capital and other factors influencing competitiveness.

REFERENCES

- [1] Porter, M.E. (1990). *The Competitive Advantage Of Nations*, New York. The Free Press.
- [2] Laksmi, Elnumeri Farli. (2020). Issues Of Social Capital In Developing Collaboration Of Information Professional Organizations In Indonesia, *Libraria*, Vol. 8, No. 2, Desember 2020, <http://Dx.Doi.Org/10.21043/Libraria.V8i2.7379>
- [3] Hidalgo, G., Monticelli, J., Bortolaso, I. (2021). Social Capital As A Driver Of Social Entrepreneurship. *Journal Of Social Entrepreneurship*. 15. <https://doi.org/10.1080/19420676.2021.1951819>.
- [4] Odesanmi, A. F., Olusegun, D. I., Babatunde, O. S., Asamu, F. F., Kayode, O. E., Arowolo, O. T. (2025). Community Service Entrepreneurship, Social Capability, And Sustainable Development: A Social Capital Perspective. *Ilorin Journal Of Education*, 45(1), 248–265. <https://ije.unilorinedu.sch.ng/index.php/ije/article/view/218>.
- [5] Irsan (2022). Relations Between Social Capital And Human Capital Of The Fishermen Community, *Hasanuddin Journal Of Sociology*, Volume 4, Issue 1. <https://journal.unhas.ac.id/index.php/hjs/issue/view/1131>.
- [6] Braunscheidel, M.J., Suresh, N.C., Boisnier A.D. (2010). Investigating The Impact Of Organizational Culture On Supply Chain Integration, *Hum. Resour. Manag.*, 49 (5), Pp. 883-911. <https://doi.org/10.1002/Hrm.20381>.
- [7] Cao, Z., Huo, B., Li, Y., Zhao, X. (2015). The Impact Of Organizational Culture On Supply Chain Integration: A Contingency And Configuration Approach, *Supply Chain*

- Manag.: Int. J.*, 20 (1), Pp. 24-41. <https://doi.org/10.1108/Scm-11-2013-0426>.
- [8] Porter, M.G. (2019). Supply Chain Integration: Does Organizational Culture Matter?, *Operations And Supply Chain Management-An International Journal*, 12(1), 49–59. <https://doi.org/10.1108/Scm-11-2013-0426>
- [9] Hameri, Ari-P., Pålsson, J. (2003). Supply Chain Management In The Fishing Industry: The Case Of Iceland, *International Journal Of Logistics Research And Applications*, 6(3):137-149, September 2003, <https://doi.org/10.1080/1367556031000123098>.
- [10] Tukan, M., Esmail, H.A.H., Hozairi, Camerling, B., Alim, S., Manapa, E.S., Berhutu, P. (2024). Modeling Of Ship Sailing Patterns In Maluku To Support The Sea Highway, *International Journal Of Technology (Ijtech)*, Vol 15, No 1. <https://doi.org/10.14716/Ijtech.V15i1.6231>.
- [11] Tukan, M. (2021). *Optimalisasi Dimensi Transportasi Laut Berbasis Potensi Ekonomi Wilayah Pulau (Optimizing Sea Transportation Dimensions Based On The Economic Potential Of Island Regions)* Archipelago Engineering Proceeding, 4, August 17th 2021, Pattimura University Ambon, 1-8. <https://ojs3.unpatti.ac.id/index.php/Ale/Article/View/4343>. (Original In Indonesian)
- [12] Matena, M., Raffel, C. (2021). Merging Models With Fisher-Weighted Averaging, *Advances In Neural Information Processing Systems*, Vol. 35, Pp. 17703-17716. <http://dx.doi.org/10.48550/Arxiv.2111.09832>.
- [13] Cooke, S.J., Nguyen, V.M., Chapman, J.M., Andrea, J.R., Landsman, S.J., Young, N., Hinch, H.G., Schott, S., Mandrak, N.E., Semeniuk, C.A.D. (2021). Knowledge Co-Production: A Pathway To Effective Fisheries Management, Conservation, And Governance, *Fisheries*, Vol. 46, No. 2, Pp. 89-97. <https://doi.org/10.1002/Fsh.10512>.
- [14] Luhur, E. S., Mulatsih, S., Puspitawati, E. (2019). Competitiveness Analysis Of Indonesian Fishery Products In The Asean And Canada Market. *Signifikan: Jurnal Ilmu Ekonomi*. Vol. 8 (1): 105 – 120. <http://dx.doi.org/10.15408/Sjie.V8i1.7301>.
- [15] Kakerissa, A. L., Hiariey, J., Abrahamsz, J., Lopulalan, Y. (2024). Value Chain Model Of The Smoked Fish Industry In Small Island, *Acta Logistica*, Volume: 11, Issue: 2 Pages: 211-220. <https://doi.org/10.22306/Al.V11i2.498>.
- [16] Hermundsdottir, F., Aspelund, A. (2021). Sustainability Innovations And Firm Competitiveness: A Review, *Journal Of Cleaner Production*, Volume 280, Part 1. <https://doi.org/10.1016/J.Jclepro.2020.124715>.
- [17] Osei, M. B., Papadopoulos, T., Acquaye, A., Stamati, T. (2023). Improving Sustainable Supply Chain Performance Through Organisational Culture: A Competing Values Framework Approach, *Journal Of Purchasing And Supply Management*, Volume 29, Issue 2. <https://doi.org/10.1016/J.Pursup.2023.100821>.
- [18] Chauhan, C., Kaur, P., Arrawatia, R., Ractham, P., Dhir, A. (2022). Supply Chain Collaboration And Sustainable Development Goals (Sdgs). Teamwork Makes Achieving Sdgs Dream Work, *Journal Of Business Research*, Volume 147, Pages 290-307. <https://doi.org/10.1016/J.Jbusres.2022.03.044>.
- [19] Shaadikin, R., Mastu, L.O.K., Zunardin, Fitria, A., Yadir. (2022). Peran Pelabuhan Perikanan Terhadap Kemajuan Sosial Ekonomi Masyarakat Nelayan Di Wangi-Wangi Selatan Kabupaten Wakatobi, *Jurnal Kapalamada*, Vol. 1, No. 1, Pp. 116-126. (Original In Indonesian).
- [20] Kusdiantoro, Fahrudin, A., Wisudo, S.H., Juanda, B. (2019). The Economic Impact Of Capture Fisheries Development In Indonesia, *Aacl Bioflux*, Vol. 12, No. 5, Pp. 1698-1709. <https://www.bioflux.com.ro/Aacl>.
- [21] Sirajuddin, R.F., Salim, A., Saleh, H. (2022). Pengaruh Industri Perikanan Terhadap Sosial Ekonomi Masyarakat Di Kawasan Pesisir Kota Kendari, *Journal Of Aquaculture And Environment*, Vol. 5, No. 1, Pp. 29-33. <https://doi.org/10.35965/Jae.V5i1.2022> (Original In Indonesian).
- [22] Zulkipli, Ujianto, Andjarwati, T. (2021). The Effect Of Fisheries Productivity, Socioeconomic Factor, Non-Fisheries Business Opportunity On Vulnerability And Poverty: Small-Scale Fisheries In Riau Islands, Indonesia, *International Journal Of Entrepreneurship And Business Development*, Vol. 4, No. 1, Pp. 7-18. <https://doi.org/10.29138/Ijebd.V3i4.1252>.
- [23] Rohani, A. A., Mohamad, F., Jaya, B. P. M. (2023). Impact Of Indonesia Government Policy

- In Pp No. 27 Of 2021 Concerning The Implementation Of The Marine And Fisheries Sector, *Supremasi Hukum*, 19, 27-36. [Http://Dx.Doi.Org/10.33592/Jsh.V19i1.3344](http://dx.doi.org/10.33592/jsh.v19i1.3344).
- [24] Achmadi, T., Nugroho, R. (2022). *Navigating Indonesian Maritime Policies: Constructive, Distortive, And Accelerative*, Its, Indonesia. https://www.its.ac.id/seatrans/wp-content/uploads/sites/41/2018/10/2023-11-15-Memetakan-Kebijakan-Kemaritiman_Final_Rev.Pdf.
- [25] Soumokil, R. (2021). Strategy To Improve The Class Of Ambon Archipelago Fisheries Port Into An Ocean Fishery Port Using Swot Analysis, *Arika*, 15(1), 1-14. <https://doi.org/10.30598/Arika.2021.15.1.1>.
- [26] Kakerissa, A.L., Hahury, H.D., Louhenapessy, F.H. (2022). Potential Of Smoked Fish Industrial Cluster In The Islands Areas, *Acta Logistica*, Vol. 9, No. 4, Pp. 457-466. <https://doi.org/10.22306/Al.V9i4.347>.
- [27] Qingmei, L., Hong, Z. (2021). The Effect Of Maritime Cluster On Port Production Efficiency, *Maritime Policy & Management*, Vol. 48, No. 1, Pp. 61-74. <https://doi.org/10.1080/03088839.2020.1754479>.
- [28] Athaya, M. F., Yushafirra, M., Rahman, R. A., Ardhillah, F., Savitri, H. D., Maharani, T. F., Putri, T. F. (2023). *The Analysis Of Manufacturing Industry Sector In Maluku Province*, E3s Web Of Conferences 468, Ict Ugm. <https://doi.org/10.1051/E3sconf/202346806015>.
- [29] Ririmasse, P. M., Retraubun, A. S. W., Hiariey, J., Lopulalan, Y. (2023). Social Capital Relationship Model And The Empowerment Of Fishery Institutional Identity: A Study Of Purse Seine Group Of Hitu Village, Ambon, *Aacl Bioflux*, 15(4), 1843-1849. <http://www.bioflux.com.ro/Aacl>.
- [30] Wiber, M., Charles, A., Kearney, J., Berkes, F. (2009). Enhancing Community Empowerment Through Participatory Fisheries Research, *Marine Policy*, 33, 172-179. <https://doi.org/10.1016/J.Marpol.2008.05.009>.
- [31] Burgess, P. R., Sunmola, F. T. (2023). Wertheim-Heck, S.: A Review Of Supply Chain Quality Management Practices In Sustainable Food Networks, *Heliyon*, Volume 9, Issue 11. <https://doi.org/10.1016/J.Heliyon.2023.E21179>.
- [32] Calderón, W., Ortiz, D., Pazmiño, A., Naranjo, I. (2022). *Distribution Of Facilities To Improve The Raw Material Storage System*. In: García, M.V., Gordón-Gallegos, C. (Eds) Cse: International Conference On Computer Science, Electronics And Industrial Engineering (Csei). Lecture Notes In Networks And Systems, Vol 678. Springer, Cham. https://doi.org/10.1007/978-3-031-30592-4_37.
- [33] Mehner, L., Rothenbusch, S., Kauffeld, S. (2024). How To Maximize The Impact Of Workplace Training: A Mixed-Method Analysis Of Social Support, Training Transfer And Knowledge Sharing, *European Journal Of Work And Organizational Psychology*, 1–17. <https://doi.org/10.1080/1359432x.2024.2319082>.
- [34] Yong, Y., Lee, P. K. C., Cheng, T. C. E. (2016). Continuous Improvement Competence, Employee Creativity, And New Service Development Performance: A Frontline Employee Perspective, *International Journal Of Production Economics*, Volume 171, Part 2, Pp. 275-288. <https://doi.org/10.1016/J.Ijpe.2015.08.006>.
- [35] Richmond, L., Casali, L. (2022). The Role Of Social Capital In Fishing Community Sustainability: Spiraling Down And Up In A Rural California Port, *Marine Policy*, Volume 137. <https://doi.org/10.1016/J.Marpol.2021.104934>.
- [36] Baka, W. K., Rianse, I. S., La Zulfikar, Z. (2024). Palm Oil Business Partnership Sustainability Through The Role Of Social Capital And Local Wisdom: Evidence From Palm Oil Plantations In Indonesia. *Sustainability*, 16(17), 7541. <https://doi.org/10.3390/Su16177541>.
- [37] Sekhar, N.U. (2007). Social Capital And Fisheries Management: The Case Of Chilika Lake In India. *Environmental Management* 39, 497–505. <https://doi.org/10.1007/S00267-006-0183-0>.
- [38] Sanmugam, A., Pradeep, P., Selim, A., Rajinder, D., Ilham, S., Thillai, R.P., Farid, S., Baharudin, K., Kalisri, L.A., Murali, R., Wong, C.H., Prakash, S. (2023). The Role Of Open Innovation And A Normalizing Mechanism Of Social Capital In The Tourism Industry, *Journal Of Open Innovation: Technology*,

Market, And Complexity, Volume 9, Issue 2.
<https://doi.org/10.1016/J.Joitmc.2023.100056>

- [39] Sari, R. A., Harahap, R. D., Jannah, N. (2024). Fishermen Empowerment Through Product Diversification Viewed From The Maqashid Syariah Perspective In Pantai Labu District. *Baskara: Journal Of Business And Entrepreneurship*, 7(1), Pp. 105–117. <https://doi.org/10.54268/Baskara.V7i1.24367>
- [40] Patmawati, Saputra, E., Sahidu, A.M., Samara, S.H., Leonard, R., Agustina, M., Rahmawati, G.A., A'yun, S.N., Ibrahim, Z. And Husein, M.A.A. (2024). Introducing The Diversification Of Fishery Products From Cultivated Milkfish As A Trigger For The Creative Economy In The Former Prostitution Area Of Kampung Dolly, Surabaya, *Journal Of Aquaculture And Fish Health*, 13, 407-415. <http://dx.doi.org/10.20473/Jafh.V13i3.40369>
- [41] Mendo, A.Y., Abdul, I., Selvi. (2024). Diversification Strategy Of Processed Tuna Fish Products For Coastal Community Empowerment In Bone Bolango Regency, *International Journal Of Social Science And Human Research*, 07. <http://dx.doi.org/10.47191/Ijsshr/V7-I11-27>
- [42] Delechat, C.C., Melina, G., Newiak, M., Papageorgiou, C., Wang, K., Spatafora, N. (2024). Economic Diversification In Developing Countries – Lessons From Country Experiences With Broad-Based And Industrial Policies, *Departmental Papers*, 2024 (006), A001. <https://doi.org/10.5089/9798400240201.087.A001>
- [43] Purwanto, E., Isdiantoni, I., Syahril, S. (2025). Processed Fish Products Based On Diversification And Standardization, *Journal Of Community Service And Empowerment*, 3, 18-25. <https://doi.org/10.22219/Jcse.V3i1.18590>