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Seafood MSME Performance in Export-Linked Supply Chains: Implications for Local Trade Policy in Panay Island, Philippines

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Abstract

This study looked at how micro, small, and medium-sized enterprises (MSMEs) in the seafood sector on Panay Island in the Philippines are performing in their role within the export-bound supply chain, and what these effects might be on local trade policies. The study used a quantitative research design and data were collected from 421 seafood MSMEs in the provinces of Aklan, Antique, Capiz, and Iloilo using a purposive sampling method, where all respondents were part of the supply chain of seafood products exported from Panay Island. The performance of these MSMEs was calculated using 8 metrics based on Buchdadi et al. (2020) and the data was analyzed by statistical descriptive and nonparametric techniques. The analysis shows that 85.28% of the seafood MSMEs on Panay Island operate with high to very high-performance levels. Comparison of these performance levels in relation to the location of the MSMEs, their type of business, their main buyer category, number of years in business, size of the workforce and the estimated amount of their assets revealed considerable differences in the performance levels of these seafood MSMEs. In particular, it is the general view that the performance of the seafood MSMEs working for traders connected to exporters is different from that of those focused on the local markets. The main hurdles cited by the MSMEs are weather disruptions to seafood supply (90.50%), seasonal fluctuations in catch (90.02%) and price volatility of seafood products (85.27%). Even with operational difficulties, the seafood MSMEs in the export-linked supply chain on Panay Island were shown to have a high level of performance. These differences among MSMEs and the hurdles that are encountered by them should be considered in the development of the local trade policy for this area. Since purposive sampling and self-reported measures were used, these findings remain only representative for the MSMEs under consideration, and cannot be considered as representative for the entire population.

Keywords: Seafood MSMEs, enterprise performance, export-linked supply chains

Introduction

Seafood production and trade are crucial to the economies of the coastal communities of Panay Island, Philippines. Businesses of all sizes, from micro to medium-sized, are involved in the harvesting, trading, and processing of seafood in Aklan, Antique, Capiz, and Iloilo. Some of these businesses are involved in the export trade of seafood products but do not trade directly on the international markets themselves. Instead, they supply their products to larger trading and processing businesses that are involved in the export markets. These relationships between these smaller seafood businesses and the larger businesses that supply the export markets are examples of the relationships between the businesses described in the

study by Gereffi et al. (2005). Many studies have examined the performance of the businesses involved in international trade. Some of these studies include those by Cavusgil and Zou (1994) and Wagner (2007), which examine the relationship between a business export marketing strategy and its performance. Other studies include those by Barney (1991) and Kaleka (2010), which examine the relationship between the resources of a business and its performance.

However, most of these studies have focused on the performance of businesses that are directly involved in the international markets. Therefore, these studies do not explain the variations in the performance of the smaller seafood businesses that supply the seafood to the businesses that are directly involved in the international markets. The study of these smaller seafood businesses in the coastal communities of Panay Island can provide evidence of the differences in the performance of these businesses. The various seafood businesses in the coastal communities of Panay Island have different financial resources, access to preservation facilities, and relationships with the markets that they supply with seafood products. These differences have the potential to influence the ability of these businesses to operate. Initiatives to support these businesses that do not take into account the differences between them will not be able to address the circumstances of each of these businesses. An understanding of the variations in the performance of these businesses will allow for the implementation of support measures that are more appropriate for the businesses in these coastal communities.

This study looked at how the seafood MSMEs operated in the selected coastal areas of Panay Island. It also examined how different business performance between MSMEs was affected by certain traits, specifically how those MSMEs are involved in domestic commerce as well as indirect exporting of goods. The results are a demonstration of the how the business units operate and it is believed by many stakeholders that local authorities would utilize the same to formulate trade and developmental policies of the region.

Statement of the Problem

This study aimed to examine the performance of seafood MSMEs on Panay Island in relation to the local trade policy of the region. The study aims to answer the following research questions:

1. What is the profile of seafood MSMEs on Panay Island in terms of?
   1.1 Province
   1.2 Length of business operation
   1.3 Number of employees
   1.4 Estimated asset size
   1.5 Business type
   1.6 Primary buyer type
   1.7 Supply to export-oriented buyers
   1.8 Access to cold storage facilities
   1.9 Registration status
   1.10 Cooperative membership
2. What is the level of performance of seafood MSMEs in the selected coastal communities in Panay Island?
3. Is there a significant difference in the performance of the MSMEs when grouped according to the business profile variables?

4. What are the operational problems and challenges of the seafood MSMEs in the local and export-linked supply chains?

Hypotheses of the Study

The following null hypothesis was tested in this study:

There is no statistically significant difference in seafood MSME performance when enterprises are grouped according to selected business profile characteristics.

Theoretical Framework

Differences in business success are mainly explained using the Resource-Based View (RBV) framework. Barney (1991) suggests that resources that are valuable, rare, imperfectly imitable and non-substitutable, allow an enterprise to gain sustained competitive advantage. The success of an enterprise is linked with the resources that an enterprise holds and its ability to utilize them to its benefit. Applied to the seafood MSMEs, this theory is used to explain variations in success of the MSMEs arising due to characteristics such as asset size. The other theory applied in the study of variation in success of an enterprise is the GVC Theory. According to the Theory of Global Value Chain as noted by Gereffi et al (2005) it can be observed that governance of global value chain is determined by the components like transaction complexity, the ability to codify information exchanged in the chain and supplier capabilities, which determine the governance and in the study of variations in the success of seafood MSMEs stemming due to buyer classifications and participation in export supply chains, such components are considered. Dynamic Capabilities Theory is the third theory applied to the study of the variations in the success of the seafood MSMEs. In dynamic capability Theory, Teece (2007) argues that dynamic capabilities allow an enterprise to adjust to the shifting environment in which the enterprise operates. Such capabilities involve the ability of the enterprise to perceive environmental opportunities and threats, to grab those opportunities and reconfigure resources of the enterprise in its favor due to environmental shifts. Because of the unstable supply of seafood, effects of weather on the operations and shifting market conditions, this theory is still relevant to the seafood enterprises. The Dynamic Capabilities theory has only been applied to understand conditions where the MSMEs in the seafood industry operated, without independently measuring the dynamic capabilities of the seafood enterprises, but has not been used to explain variations in the success of those MSMEs. The main theoretical framework to comprehend variations in the success of seafood MSMEs was the Resource-Based View (RBV) theory. The GVC theory and the Dynamic Capabilities theory were applied as well in an attempt to present further viewpoints about factors impacting the success of those enterprises. Those theories, without assuming that the research measured the constructs of the theories or established any causal relationships between the constructs and the success of those enterprises, were used to interpret the success of the seafood MSMEs.

Conceptual Framework

The conceptual framework of this study examines the difference in the performance of seafood micro, small, and medium enterprises (MSMEs) based on selected characteristics of the MSMEs in the coastal communities of Panay Island. The independent variables of the study include province, length of operation, number of employees, estimated asset size of the MSMEs, the type of the MSMEs, the type of the main buyers of the MSMEs, whether the MSMEs supply to export-oriented buyers, whether the MSMEs have access to cold storage, the registration status of the MSMEs, and whether the MSMEs are

members of a cooperative. These independent variables represent the differences in the characteristics of the MSMEs. The dependent variable of the study is the performance of the MSMEs, which comprises the financial, operational, service, workforce, and innovation performance of the MSMEs.

Figure 1 depicts the variables of the study and how the performance of the MSMEs is compared across the different profiles of the MSMEs. The conceptual framework of the study does not suggest any causal relationship between the characteristics and the performance of the MSMEs.

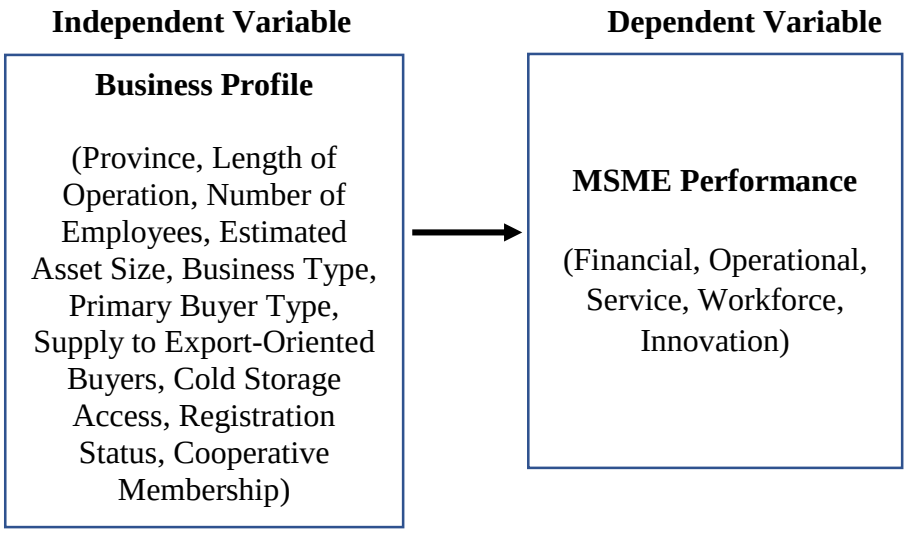


Figure 1. Conceptual Framework of the study

Scope and Limitations of the Study

This study looked at the performance of seafood small and medium-sized businesses in selected coastal areas of the Aklan, Antique, Capiz, and Iloilo provinces on Panay Island in the Philippines. Businesses that create, swap, harvest and alter seafood products, and businesses that work in the seafood export trade through middlemen were all part of the study. 421 people were surveyed across these provinces, which were selected for participation through purposive sampling. Areas such as finance, operations, customer service, staff management and innovation were assessed for these seafood businesses. Differences between the performance of the seafood businesses depending on various business traits were also analyzed. However, this study did not focus on the export seafood industry in the Philippines or on the financial and operational performance of the industry as a whole. It has been observed that because a non-probabilistic selection technique was applied and a full list of participants was missing, the findings cannot be applied to entities outside of those studied. Information provided directly by the individuals was used by this research. A cross-sectional method was chosen instead of a longitudinal one, so causal links between the studied factors were not established by this work. Seafood MSMEs in the Panay Islands or the Philippines are not represented by these outcomes. Implications of the findings for regional and national trade rules were thought about, but the impact of existing regulations on the seafood industry was not measured by this research. The data gathered from the participants are what restrict these implications.

Conceptual Literature

Business tasks performed to reach company goals bring about Enterprise performance. Richard et al. (2009) state that organizational performance is defined by financial and non-financial results of firm

activities. Different emphasis on financial versus non-financial aspects of activities allows for the differentiation of these two concepts within small and medium enterprises (SMEs). Metrics used by a company are required to be appropriate to its activities, as Neely et al. (1995) emphasize. Financial situation, operational efficiency, provided services, workforce practices, and innovation-related activities might be included in these metrics for smaller enterprises.

Enterprise performance might vary because of the resources possessed and the utilization of those resources. Financial capital, workforce, and owned facilities used to enable operations are resources of an enterprise. High company performance is not automatically resulted in by the availability of these resources. Results of activities are determined by the way in which the company utilizes its resources. This holds true for smaller enterprises, which possess varying levels of resources.

Assessment of an enterprise's performance involves a number of other factors in the seafood industry. Highly perishable products are sold by the industry, which means appropriate handling, preservation, and storage are required (Food and Agriculture Organization of the United Nations [FAO], 2022). Different requirements for these activities are held by each type of enterprise within the seafood industry. Financial metrics alone are not appropriate to evaluate the performance of these companies because such metrics may ignore other activities that are undertaken by these companies.

Performance of those enterprises is influenced by the commercial relationships formed by smaller enterprises. Opportunities and limitations for those enterprises result from the participation of smaller enterprises in global value chains, as discussed by Humphrey and Schmitz (2002). Many people believe that access to larger markets is provided to those enterprises that sell to intermediaries, while performance is limited by the requirements of those intermediaries. Relationships with buyers must be accounted for when an analysis of the performance of these enterprises is conducted.

Factors beyond the financial results of an enterprise are highlighted in literature regarding enterprise performance. Characteristics that must be considered when evaluating performance are held by each type of enterprise. A number of factors that must be considered to appropriately evaluate the performance of these companies exist in the case of seafood SMEs. Experts claim that the complexity of seafood SMEs requires a broad evaluation framework that exceeds simple balance sheets.

Foreign Studies

International research has explored the relationships between enterprise characteristics, market participation, and business performance. In their 1994 study, Cavusgil and Zou explored the factors associated with export marketing performance. Wagner (2007) reviewed studies of firms of various sizes and found that exporting firms generally exhibited higher levels of productivity than non-exporting firms. Wagner also noted that there was more evidence of more productive firms entering into exporting activities than of exporting firms exhibiting improvements in productivity as a result of their exporting activities. These studies suggest that differences in business performance may exist prior to the entry into international markets. However, these studies focused on the exporting firms themselves.

Kaleka (2012) examined the relationship between a firm’s resources and capabilities and its export venture performance. The study found that different resources and capabilities had different relationships with the performance of exporting ventures. In their review of 124 studies published between 2006 and 2014, Chen et al. (2016) found that the factors that influenced the export performance of firms varied significantly. Furthermore, there was considerable inconsistency in the findings of these studies. Although these studies provide evidence of the relationships between enterprise characteristics and their performance, their

findings may not be directly applicable to smaller suppliers that operate through domestic intermediaries. Studies that examined the agricultural export industry provided some evidence regarding the economic performance of smaller agricultural producers and workers. Maertens and Swinnen (2009) investigated the effects of the participation of vegetable exporting supply chains in Senegal. The study found that the participation of smaller agricultural producers in the export of high-standard vegetables contributed to their incomes and to the reduction of poverty in the region. However, the requirement of higher standards for exported products encouraged the shift of smallholder contract farming to large-scale estate production. Thus, the economic benefits of the export of agricultural products may depend upon the structure of the supply chains.

In the seafood industry, Bush et al. (2015) examined the governance of sustainability in the industry. The study examined the various ways in which the governance of the supply chains of the seafood industry influenced the performance of the firms in those supply chains. Although the study did not directly measure the performance of MSMEs in the industry, the study provided some evidence of the conditions under which these firms may operate. Overall, the reviewed studies suggest that there are relationships between the characteristics of enterprises and their performance. However, these relationships may be specific to certain types of enterprises, and their direct applicability to smaller seafood suppliers and their performance requires further investigation.

Local Studies

Philippine research has examined how enterprise characteristics and market participation relate to business outcomes. Duenas-Caparas (2008) examined the export performance of Philippine manufacturing firms, finding that firms with foreign affiliation were more likely to export. Pelkmans-Balaoing et al. (2016) used firm-level data from Philippine manufacturing exporters to reveal that the average duration of export relationships was 20 months, with considerable variation in firms' ability to remain in international markets. While these studies provide insight into the export performance of Philippine manufacturing firms, they do not examine the performance of smaller enterprises that supply export markets through domestic intermediaries.

Canare et al. (2017) examined the relationship between small and medium enterprises (SMEs) and larger firms in the Philippines. Based on survey data from 530 enterprises in Metro Manila, the authors identified the benefits of these relationships as access to markets and the transfer of knowledge between the firms. The disadvantages of these relationships were identified as the bureaucratic procedures and the stronger bargaining power of the larger firms. Furthermore, certain forms of business linkage were identified as being associated with the success factors of the enterprises. These findings suggest that the relationship between SMEs and larger firms in the Philippines may provide some commercial advantages to the SMEs while exposing them to the constraints of the stronger bargaining power of the larger firms.

Availability of money was researched in the field of Philippine enterprises. A study done by Aldaba (2012) looked into the connection between money availability and the functions of SMEs in the Philippines. The study was looking at ninety-seven manufacturing companies, and it showed that the small and medium enterprises met major difficulties with finances. Most of the companies funded their functions through internal sources. It was also realized that these companies' access to external sources for money was limited as they lacked collateral and financial documentation for their operations, and their credit reputation was seen by banks with skepticism. This means that, in the Philippines, there exist some constraints that restrict small-scale firm growth, which are then influenced by individual firm features.

Ferolin and Dunaway (2013) also carried out research on how small-scale fishing family economic conditions relate to the development of the export-oriented fisheries industry in the Philippines. The authors pointed to the link that existed between the credit reliance of the fishing families and the unfair trade links with bigger companies (which buy their fish to be sent to other countries). While the success of these fishing firms was not assessed by the authors, their study provides the proof for the commercial links existing between smaller firms of the seafood supply chains in the Philippines.

These studies suggest that enterprises in the Philippines work in different financial and commercial situations. Many people consider information about business connections and seafood supply chains especially important for the study of the situations of smaller seafood suppliers in the Philippines.

Synthesis

Research shows that a business thrives on its assets, talent, and network of relationships. Studies regarding this relationship in other countries have been predominantly centered on transport, farming, and production supply chains. In the Philippines, studies have explored the connection between shipping, banks, and commercial firms. Studies have looked at how different elements change and how they affect the functioning of an organization, each using different performance Yardsticks and locations. Not enough is therefore known about small seafood suppliers in the Philippines.

Investigations concerning seafood supply chains have looked at the market, commercial, and working elements which change the success of such an organization. It has been observed by the researcher that no investigation has offered knowledge about the success of MSMEs possessing differing traits. This research will fill that void in the writing by offering knowledge about the success of seafood MSMEs found in the coastal area of Panay Island. The question of whether the success of these seafood MSMEs changes based on their traits is explored by this research, which will have consequences for the creation of trade rules in this part of the Philippines.

Methodology

For this study, the researcher used quantitative and cross-sectional study designs to explore how seafood MSMEs performed in some coastal communities in Panay Island, Philippines. They relied on both descriptive and comparative statistics to evaluate the performances reported and differentiate between enterprise characteristics. While the researcher could not conclude which caused which, comparing the performance of different groups of businesses still led to insights as most people believed.

Locale of the Study

The research was conducted at several seaside areas or local government units in the four provinces that make up Panay Island in the Western Visayas area of the Philippines: Aklan, Antique, Capiz and Iloilo. The reasons for selecting these particular provinces are the groups in each of the provinces that are engaged in various areas of the fishing and seafood industries in the Philippines including producing, trading, processing and the drying of fish. It is felt by many that such selected local seaside regions are a snapshot of the various types of seafood enterprises that are found within the Philippines including those involved in the supply chain for consumption by the local people and for export to other countries in the world.

Sample Size and Sampling Procedure

The subjects were micro, small and medium enterprises (MSMEs) of seafood, in production, trade,

consolidation, processing and all related activities. They were based in selected coastal communities of Panay Island. They were to have been part of an export-oriented chain, by selling directly to exporters or intermediaries. It did not matter whether their buyers were into local or international market. They were in this business. Since there was no official register of such enterprises, it was impossible to define a sampling frame and purposive sampling was used to select the respondents meeting the criteria.

To determine a base figure for recruitment, I utilized Cochran's (1977) formula. The resulting figure, which stands at 385 respondents, was based on 95% confidence and a margin of error of 0.05, assuming an estimated population proportion of 0.50. These variables, however, were only relevant for sample size considerations given that purposive sampling does not lend itself to determining the statistical representativeness or margin of error for a given sample. The final sample was composed of 421 participating enterprises.

Respondents of the Study

The research included 421 small, medium and micro seafood businesses in selected coastal areas of Aklan, Antique, Capiz and Iloilo. The respondents were owners, managers, operators or authorized representatives with first-hand knowledge of the operations and trade activity of the respective enterprises. The enterprises studied either produced, processed, traded, aggregated or supplied seafood related products and had established trade links into export market supply chains either directly or via intermediary buyers. The information provided by each respondent was for the enterprise they represented. The characteristics of the business and the trading relationships were recorded at the enterprise level, enabling the comparison of performance of the different categories of seafood MSMEs.

Research Instrument

The data used in this study were collected by using a survey questionnaire comprised of three sections: company profile, self-reported performance of the MSMEs and operational hurdles. The section assessing performance had to do with business practices that were performed by a company in the previous 12 months with eight statements (Buchdadi et al., 2020), e.g., recovering its finance, lowering its cost of operations, customer's satisfaction and number of orders it received, how it confirmed the orders, making its employees comfortable, working in alignment to the business objectives, responding to the market's demand for products and any kind of activity done related to research or innovation. These eight statements were measured using a scale ranging from 1 to 5 which represented: 'Strongly Disagree' to 'Strongly Agree'. The eight items that were combined generated one composite performance score reflecting the whole performance of an enterprise.

The operating challenges were identified using a checklist, with a 40-multiple response question regarding different areas of the seafood business operation, with 33 of these included as parts of the performance analysis and the seven relating to export and market access excluded from the descriptive results, which was to ensure the study remained focused, not that they were unrelated. Multiple answers were allowed for the respondents and the results are presented in frequencies and percentages based on 421 enterprises that had participated. The responses to the operation challenges checklist were analyzed separately and were not included in the composite performance score.

Validity and Reliability of Research Instruments

The adapted performance instrument was evaluated and approved by the dissertation panel before the

collection of any data. The panel, in its review, looked at the relevance, clarity, and applicability of the survey questions to seafood-related enterprises operating within the coastal communities of Panay Island, and checked on the suitability of the survey for a respondent group that included producers, traders, consolidators, and processors. Though the instrument was approved for use by the dissertation panel, that validation did not encompass an establishment of construct validity. Performance indicators were analyzed as a single measure, which resulted in a Cronbach's alpha coefficient of .88 for the eight-item performance scale, and researcher suggest that this high value indicates strong internal consistency. This coefficient provided evidence of the internal consistency of the statements within the performance measure, but did not establish its construct validity or indicate that the measures represented a single underlying dimension. To minimize the potential for response bias, the study informed the respondents that their information would be treated with confidentiality and presented the business profile questions separately from the performance statements. However, because the study relied on a single respondent to complete the questionnaire for each enterprise, the study may have been subject to common method bias.

Data Gathering Procedure

Data was collected over the course of six days from the selected coastal communities on Panay Island. The researcher was accompanied by six research assistants during the field visits to the various municipalities. The respondents were selected by visiting the different fish ports, buying stations, processing areas, and other seafood trading establishments within the municipalities. Prior to distributing the questionnaires, the researcher verified that each of these establishments was connected to the export of the seafood products. Each research assistant was assigned to different areas of the municipalities to distribute the questionnaires. Each respondent was informed of the purpose of the research and given the opportunity to ask questions regarding the content of the questionnaire. The completed questionnaires were checked for completion at the time that they were completed and the researcher returned to verify any incomplete responses. This process was repeated for each of the selected municipalities.

Categorization and Scoring of Variables

The performance of MSMEs is measured with 8 positively designed items on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). All statements were in the same direction, where higher scores are associated with higher evaluations of firm performance, thus avoiding reverse coding. These 8 statements have been averaged (unweighted mean) in order to calculate an index for overall performance, so every item is weighted equally.

The composite performance score for each MSME was calculated by taking the unweighted arithmetic mean of the eight statements. Each item was given equal weight in calculating the score. The scores were divided into five performance levels with equal-width intervals within the possible range of 1.00 to 5.00: Very Low (1.00 to 1.80), Low (1.81 to 2.60), Moderate (2.61 to 3.40), High (3.41 to 4.20), and Very High (4.21 to 5.00), as shown in Table 1. These classifications represent the respondents' assessments of the performance of the MSMEs, and do not necessarily represent the actual performance of the MSMEs in terms of profitability, sustainability, or other indicators.

Table 1: Classification of Composite MSME Performance Scores

Mean Range	Response Interpretation	Performance Level
4.21 to 5.00	Strongly Agree / Excellent implementation or capacity	Very High

3.41 to 4.20	Agree / Favorable implementation or capacity	High
2.61 to 3.40	Neutral / Moderate implementation or capacity	Moderate
1.81 to 2.60	Disagree / Limited implementation or capacity	Low
1.00 to 1.80	Strongly Disagree / Very weak implementation or capacity	Very Low

Note. Mean ranges represent inclusive continues score intervals.

Data Analysis Procedure

Data analysis was conducted using the statistical software Stata. Frequencies and percentages were used to describe the characteristics of the enterprises, their performance classifications, and the challenges they encountered. Mean, standard deviation, and median values were calculated to describe the composite MSME performance scores. Nonparametric tests were used to examine whether performance scores differed between the various categories of enterprise profiles, after first examining the distribution of the performance scores to identify any departures from normality. The Kruskal-Wallis H test was used to test for differences in the performance scores across the categories of the enterprise profiles, including province, business type, primary buyer type, length of operation, number of employees, and estimated asset size. For any significant Kruskal-Wallis results, pairwise comparisons between the categories were conducted using the same multiple-comparison adjustment used in the statistical analysis. The Mann-Whitney U test was used to compare the performance scores between the binary profiles of the enterprises, including supply to export-oriented buyers, cold storage access, registration status, and cooperative membership. The statistical significance of the differences in the performance scores was assessed at the .05 level for both the omnibus and binary comparisons. For the post hoc tests, the significance level was adjusted for the number of comparisons. The results of these statistical tests were used to describe the differences in the distributions of the performance scores for the various categories of enterprise profiles, rather than to establish any causal relationship between those profiles and the performance scores of the MSMEs.

Ethical Considerations

The participants had the option to opt-out at any time. The purpose of the study was conveyed to the participants before they completed the survey. They were informed that participation was entirely voluntary and that they could decline to participate or decline to answer any question that they preferred not to answer. Their consent was obtained before any data was collected from them. They did not have to reveal information related to confidential financial records, private buyer arrangements or trade secrets. The names of the participants and the enterprises that they represented were not disclosed in the manuscript and the results of the research were presented in an aggregated manner to preserve the anonymity of the participants. The completed questionnaires and the encoded responses that were obtained from the participants were kept by the researcher for the purposes of the study and also for academic purposes.

Business Profile

The surveyed seafood enterprises were distributed in the four provinces of Panay Island. As shown in Table 2, the largest number of respondents was from Capiz, with 180 (42.76%), followed by Aklan, with 96 (22.80%), Iloilo, with 92 (21.85%), and Antique, with 53 (12.59%). Note that these numbers reflect the geographical distribution of the surveyed enterprises rather than the distribution of seafood enterprises in each of the four provinces. The majority of the enterprises had been operating for many years: 40.86%

had been operating for 6 to 15 years, and 38.72% had been operating for at least 16 years. However, more than half of the enterprises (52.73%) had two or fewer workers, and over half (52.26%) had estimated assets of under ₱100,000. Traders or middlemen accounted for the highest number of the enterprises (31.35%), followed by buying stations or consolidators (31.12%), fishers or producers (22.33%), and processors (11.40%). The results indicate that the majority of the enterprises were traders or consolidators.
All 421 of the participating enterprises were eligible to participate in the study, as they had some connection to export-linked supply chains. However, there were some differences in the responses to the question concerning the enterprises' supply to export-oriented buyers. A total of 399 (94.77%) of the respondents answered Yes, while 22 (5.23%) of the respondents answered No. The enterprises that answered No were found to have some indirect connection to export supply chains. Although these responses were retained in the study as they were recorded, a No response to this question does not indicate that the enterprises did not participate in export-linked supply chains. The primary buyers for the majority of the enterprises were local markets (331 enterprises, 78.62%). The remaining enterprises reported that their primary buyers were exporters (3.80%), processors that supplied to exporters (1.43%), or traders that supplied to exporters (16.15%). While the questionnaire indicated that the first group of enterprises were those that supplied to local markets only, this label indicates their primary buyer, but not the fact that they did not supply to exporters through other means.
Access to cold storage was reported by 108 (25.65%) of the enterprises, while 313 (74.35%) did not have access to cold storage. In addition, the majority of the enterprises were not members of any cooperatives (80.76%). Business permits were the most commonly reported registration document (89.07%), followed by DTI registration (43.23%) and BIR registration (30.89%). Overall, the results of the business profile survey indicate that most of the enterprises that participated in the study had been operating for many years, but were small in terms of their workforces and asset holdings, and had limited access to cold storage or cooperative memberships.

Table 2: Business Profile

Variables	***f***	**%**
Province		
Aklan	96	22.80
Antique	53	12.59
Capiz	180	42.76
Iloilo	92	21.85
Length of Business Operations		
2 years and below	25	5.94
3 to 5 years	61	14.49
6 to 15 years	172	40.86
16 and above	163	38.72
Number of Employees		
2 and below	222	52.73
3 to 5	112	26.60
6 and above	87	20.67
Estimated Asset Size		

Below 100,000	220	52.26
100,000 to 499,999	153	36.34
500,000 and above	48	11.40
Business Type		
Fisher or producer	94	22.33
Buying station or consolidator	131	31.12
Processor	48	11.40
Trader or middleman	132	31.35
Other	16	3.80
Primary Buyer Type		
Exporter	16	3.80
Processor supplying exporters	6	1.43
Trader linked to exporters	68	16.15
Local market only	331	78.62
Access to Cold Storage		
With access	108	25.65
Without access	313	74.35
Registration Status		
DTI Registration	182	43.23
SEC Registration	14	3.33
Business Permit	375	89.07
BIR Permit	130	30.89
No Registration	31	7.36
Supply to export-oriented buyers		
Yes	399	94.77
No	22	5.23
Cooperative Membership		
With Cooperative Membership	81	19.24
Without Cooperative Membership	340	80.76

Table 3 shows the performance of 421 seafood MSMEs in the research. The research shows that 54.16% of the studied entities were at a very high-performance level; 31.12% were at a high-performance level. These groups accounted for 85.28% of the studied entities. There was 11.40% moderate performance and 3.32% low to very low performance. Most companies were given a positive ranking from our analysis, which indicates a low percentage for very low performance. These ratings, which were mainly favorable, are likely a consequence of the criteria adopted for evaluating these companies. It is worth remembering that these figures should not be used as a direct reflection of a company's financial or operational performance, as it is self-reported, although most rated highly for their performance, it does not mean they perform as well for their operations.

Table 3: Performance of Seafood MSMEs in Selected Coastal Communities of Panay Island

Performance Level	*f*	%
Very low	3	0.71
Low	11	2.61
Moderate	48	11.40
High	131	31.12
Very high	228	54.16
Total	421	100

MSME Performance when Grouped According to Business Profile Variables

Table 4 summarizes the impact of ten different variables (relating to the profiles of the MSME businesses in the sample) on their performance. Six of the variables indicated differences in performance that are statistically significant. The other four variables showed no differences. The highest difference was observed in the primary buyer type ($H(3) = 44.180$, $p < .001$). The median MSME performance was highest among the group that supplies exporters (4.69), followed by the traders of exporters (4.63) and was the lowest in the group that supplies local markets (4.13). The group supplying traders of exporters had a performance score that significantly differed from the group supplying the local market, although the performance gap between groups supplying exporters and local markets was not found to be statistically significant. MSME performance also depended on the province of the business, $H(3) = 31.371$, $p < .001$. The median performance in Capiz (4.38) was higher than the performance in Aklan and Antique (4.13) and Iloilo (4.06). Statistical analysis suggests that MSME performance in Capiz is different from all three other provinces but that there is no difference in MSME performance between Aklan, Antique, and Iloilo.

The highest median performance score of 4.50 was reported in the MSME group having six or more employees. An MSME with 3-5 employees had a median score of 4.25, while the lowest group of two or fewer employees had a score of 4.13. Variations in MSME performances based on the number of employees, $H(2) = 30.656$, $p < .001$ were found to be statistically significant. Experts say the difference in performance of MSME between those with the highest number of employees and the least number of employees is statistically significant. The estimated size of the asset also influenced the performance of an MSME, $H(2) = 29.068$, $p < .001$. The highest median score of 4.56 was found in the MSME groups with an estimated asset size of ₱500,000 and above. The MSME group with ₱100,000-₱499,999 in estimated asset size was found to have a median score of 4.38, while the group with an estimated asset size below ₱100,000 scored the lowest at 4.13. It is observed that the differences in MSME performance between those with the highest and lowest estimated asset size are statistically significant. There was no statistically significant result found in the performance of MSME in the highest and second-highest groups of estimated asset size.

There were also statistically significant differences in MSME performance based on the length of time that the MSMEs had been in operation, $H(3) = 26.185$, $p < .001$. The MSMEs that had been in operation for between six and 15 years had the highest median performance score of 4.38. The MSMEs that had been in operation for two years or less had the lowest median performance score of 3.63. The MSMEs that had been in operation for between three and five years, and those that had been in operation for at least 16 years, both had a median score of 4.13. The differences in MSME performance were statistically significant between the MSMEs that had been in operation for between six and 15 years and the other

three groups. The difference in MSME performance was also statistically significant between the MSMEs that had been in operation for two years or less and those that had been in operation for at least 16 years. The MSMEs also exhibited statistically significant differences in their performance based on their business type, H (4) = 12.906, p = .012. The MSMEs classified as fishers or producers had the highest median score of 4.44. The MSMEs classified as buying stations or consolidators, processors, and traders or middlemen all had a median score of 4.25. The MSMEs classified under other business types had the lowest median score of 4.06. The difference in MSME performance between the MSMEs classified as fishers or producers and those classified as traders or middlemen was statistically significant.

The remaining four business profile variables did not exhibit statistically significant differences in MSME performance. The performance scores for MSMEs that reported supplying to export-oriented buyers, accessed cold storage, were members of a cooperative, and were registered as businesses did not exhibit any statistically significant differences (p values = .3225, .7133, .8850, and .1638, respectively). Thus, the differences in MSME performance were observed only in the variables related to the business profile of the MSMEs.

Table 4: MSME Performance when Grouped According to Business Profile Variables

Profile	**Mdn**	**Interquartile Range**	**Statistical Tool**	**Test Statistic**	**p-value**
Province			Kruskal Wallis H test	**31.371****	**p<.001**
Aklan	4.13b	1.50			
Antique	4.13b	0.75			
Capiz	4.38a	0.75			
Iloilo	4.06b	0.88			
Supply to Export-Oriented Buyers			Mann Whitney U	***z* = 0.994ns**	**.3225**
Yes	4.25	0.75			
No	4.13	0.63			
Type of Business			Kruskal Wallis H test	**12.906***	**.012**
Fisher or producer	4.44a	0.75			
Buying station or consolidator	4.25ab	1.00			
Processor	4.25ab	0.50			
Trader or middleman	4.25b	0.88			
Other	4.06ab	0.69			
Type of Primary Buyer			Kruskal Wallis H test	**44.180****	**p<.001**
Exporter	4.69ab	0.88			
Processor supplying exporters	4.38ab	0.13			
Trader linked to exporters	4.63a	0.50			

Local market only	4.13b	0.88			
Cold Storage			Mann Whitney U	***z* = 0.368ns**	**.7133**
With access	4.25	0.75			
Without access	4.25	0.88			
Cooperative Membership			Mann Whitney U	***z* = 0.145ns**	**.8850**
With coop member	4.25	0.63			
Without coop mem	4.25	0.88			
Length of Operation			Kruskal Wallis H test	**26.185****	**p<.001**
2 years and below	3.63b	1.50			
3 to 5	4.13bc	0.88			
6 to 15	4.38a	0.75			
16 and above	4.13c	0.75			
Number of employees			Kruskal Wallis H test	**30.656****	**p<.001**
2 and below	4.13b	1.00			
3 to 5	4.25a	0.63			
6 and above	4.50a	0.75			
Asset Size			Kruskal Wallis H test	**29.068****	**p<.001**
below 100,000	4.13b	0.75			
100,000 to 499,999	4.38a	0.75			
500,000 and above	4.56a	0.75			
Registration			Mann Whitney U	***z* = -1.395ns**	**.1638**
Not Registered	4.125	0.63			
Registered	4.25	0.75			

*** highly significant (p < 0.001), * significant* (p < 0.05), ns not significant (p > 0.05).

Operational Problems and Challenges Encountered by Seafood MSMEs

Table 5 presents the operational problems and difficulties that the participating seafood MSMEs encountered. Weather disturbances during the procurement of seafood products were identified by 381 respondents, which accounts for 90.50% of the total. Seasonal fluctuations in the availability of fish affected 90.02% of the participants, while price volatility of these seafood products was noted by 85.27% of them. Cash flow challenges were faced by 81.00% of the entities, high costs of raw materials by 68.65%, and inconsistent supply of seafood products by 66.75%. Many people believe that these operational challenges were common because the majority of the surveyed enterprises reported them. Greater impacts on operations were likely experienced by those enterprises that relied upon the availability of these seafood products in a specific season.

Challenges regarding the preservation and production of seafood products were reported by a total of 67.22% of the respondents. It has been observed that inadequate cold storage or other facilities for preserving their seafood products were reported by 45.61% of the enterprises. Problems with the inconsistent quality of their seafood products were reported by 47.98% of the enterprises.

Difficulties in their commercial relationships with their buyers were reported by 54.87% of the enterprises. Fluctuating demand for their seafood products affected 53.92% of the businesses, while difficulties in the coordination with their suppliers of seafood products were faced by 52.49% of them.

Limited support from the government was reported by 61.05% of the enterprises. High costs of transporting their products were reported by 49.17% of the enterprises, while the limited capacity of their production operations was noted by 39.19% of them. Limited access to the financing or credit facilities of the enterprises was experienced by 38.00% of the participants. Experts claim that difficulties in the equipment that they used, the documentation of their businesses, the availability of their workforce, and their compliance with the regulations that govern their operations were also reported by the enterprises. A range of operational challenges were reported by the enterprises, although the extent of these challenges or whether they were statistically related to the performance of these enterprises cannot be determined.

Table 5: Operational Problems and Challenges Reported by Seafood MSMEs

Operational Challenge	***f***	**%**
Weather disturbances affecting procurement	381	90.50
Seasonal fluctuations in fish catch	379	90.02
Price volatility in seafood markets	359	85.27
Cash flow problems	341	81.00
High cost of raw materials	289	68.65
Storage spoilage and product losses	283	67.22
Limited access to consistent raw seafood supply	281	66.75
Limited support from government programs	257	61.05
Delayed payments from buyers	231	54.87
Fluctuating demand for seafood products	227	53.92
Limited coordination with suppliers	221	52.49
High transportation costs	207	49.17
Inconsistent product quality	202	47.98
Limited cold storage or preservation facilities	192	45.61
Limited production capacity	165	39.19
Difficulty scaling production volume	161	38.24
Limited access to financing or credit	160	38.00
Competition from larger firms	150	35.63
Lack of processing equipment	146	34.68
Inadequate recordkeeping and documentation	127	30.17
High labor costs	126	29.93
Transportation and logistics difficulties	120	28.50
Dependence on middlemen or traders	115	27.32
High utility costs	107	25.42
Inadequate packaging materials or technology	103	24.47
Limited knowledge of food safety standards	102	24.23
Poor road or port access	101	23.99

Regulatory compliance challenges	98	23.28
Limited access to technology upgrades	92	21.85
Difficulty hiring skilled workers	87	20.67
Difficulty complying with sanitary requirements	85	20.19
Lack of business management skills	74	17.58
High packaging and labeling costs	47	11.16

Summary

This study investigated the performance of 421 seafood MSMEs within selected coastal communities in Panay Island, Philippines. These enterprises were all within the export-linked supply chains. The study examined the performance of these enterprises and the differences between the enterprises based on their characteristics and the operational difficulties they faced as part of their operations within the local trade environment. The majority of the enterprises that participated in the study were of a small scale of operations, although many had been in operation for several years. The results of the study indicated that 85.28% of the enterprises had high to very high levels of performance. Statistically significant differences in the performance of the enterprises were observed between the provinces, types of business, types of primary buyer, length of operation, the number of employees, and the estimated size of the assets of the enterprises. There were no statistically significant differences in the performance of the enterprises based on whether they supplied to export-oriented buyers, their access to cold storage, their registration status, or their membership in a cooperative. The enterprises reported various operational difficulties despite their positive performance indicators. The most common of these difficulties were related to the weather, seasonality of the catch, the volatility of the price of the catch, and the cash flow of the enterprises. Other challenges included the spoilage of the products and the lack of proper facilities for the preservation of the catch. Overall, these findings suggest that the positive performance of the enterprises is not indicative of the absence of operational challenges and that these factors should be considered when assessing the performance of the enterprises.

Conclusions

Based on the study's findings, the following conclusions were reached:

1. The seafood MSMEs participating in the study exhibited differences in their business characteristics and trading arrangements within the export-linked supply chains in which they were involved. These differences indicate that the seafood enterprises within the same supply chains do not operate under the same conditions.
2. The self-reported performance of the seafood MSMEs did not necessarily indicate that the enterprises possessed the necessary resources or that they were protected from the operational difficulties that they faced. While most of the MSMEs surveyed reported favorable performance, they also indicated that they faced significant resource limitations and operational difficulties. Thus, the performance of the MSMEs is not a good indicator of their financial stability and their ability to withstand prolonged periods of operational difficulties.
3. The performance of the MSMEs differed based on the location of the enterprises, the type of business, the classification of the primary buyer, the operating experience of the MSME, the size of the

workforce of the MSME, and the estimated size of the asset of the MSME. Thus, the performance of the MSMEs is not uniform across the different groups of MSMEs surveyed.

4. Despite the favorable performance of most of the MSMEs surveyed, the enterprises faced operational difficulties. These operational difficulties indicate the areas of focus for the development of trade policies within the region. Thus, the study findings provide information that the government can use to design support measures for these MSMEs, taking into account the differences in their circumstances.

Recommendations

Based on the findings and conclusions of this study, the following recommendations are proposed:

1. Improve local seafood enterprise information and representation. LGUs can establish or strengthen the registries of the local seafood MSMEs according to the type of enterprise, scale of operation, market, and facilities. Such information can guide the LGUs in planning for the local trade of seafood by consulting with the local small-scale fishermen, traders, consolidators, and processors.
2. Develop enterprise assistance according to the characteristics and requirements of the enterprise. DTI, BFAR, and DOST can work with LGUs and academic institutions to provide technical assistance to the different types of seafood enterprises. Such assistance should target the specific needs of each type of enterprise in areas such as inventory, financial records, handling, quality control, and the requirements of the buyers. Furthermore, such assistance should consider the availability of the equipment and facilities of the enterprises.
3. Deal with issues of supply disruption and difficulties with postharvest preservation. Local governments at both provincial and municipal levels should study the possibility of creating shared cold storage facilities, of improving the infrastructure needed to handle seafood products in the right manner, and of having coordinated procurement deals. Frequent news of seasonal shortages, disruption caused by weather, and of food rotting, provide grounds to investigate this. The decision of which ones to implement should depend on location, operation and maintenance costs and likely use by local enterprises.
4. Check out financial plans for seasonal seafood firms. Lenders might offer working capital loans or repayment schedules tailored to changes in seafood supplies, costs, and market prices. These options could be useful for businesses facing cash flow issues and difficulty accessing loans. Plans must consider business cash flow patterns, repayment capacity and financial needs.
5. Consider reviewing the enterprise assistance programs and their actual effects on the operations of the businesses. In the future research and evaluation, it would be appropriate to see if the interventions that have been proposed can result in demonstrable improvements in enterprise performance. Through conducting longitudinal studies where the data collected from the enterprises would include their financial results, data on production levels and records of their buyer transactions (all independently verified) could result in more reliable studies on the differences that these changes have made. Where appropriate, and possible, evaluation strategies should be applied before extending and expanding the available preservation facilities, financial support and technical assistance schemes, in other areas on the coast.

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