

Study on the Development of Small-scale Tuna Fishing Industry in Bitung City, North Sulawesi, Indonesia

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Abstract: This study aimed to examine the influence of firm resources, market structure and institutions on firm performance, both directly and indirectly through entrepreneurial orientation and quality assurance as well as the influence of entrepreneurial orientation and quality assurance on firm performance. The concept of this study was based on the Structure-Conduct-Performance (SCP) theory, Resource-Based View (RBV) and theory of institutions. Data were obtained through a survey on small-scale tuna fishing firms in Bitung City. The sample was drawn using purposive sampling with 165 respondents. The research model used Structural Equation Modeling (SEM) and the data were analyzed using PLS (Partial Least Squares) method. The results showed that firm resources, market structure and quality assurance did not influence firm performance directly, but institutions and entrepreneurial orientation directly and positively influenced firm performance. Furthermore, the firm resources, market structure, and institutions indirectly and positively influenced firm performance through entrepreneurial orientation and quality assurance.

Keywords: Firm resources, Market structure, Institutions, Entrepreneurial orientation, Quality assurance, Firm performance, Fishing industry

INTRODUCTION

Indonesia is the world's largest archipelagic nation, with 17,504 islands, 104,000 km coastline and 2.54 million sq. kms of total sea area. The economic potential of sea fishery resources is estimated at USD 82 billion per year; about USD 15.1 billion per year is from capture fisheries[1]. With such great resources, the fisheries sector becomes one of the potential sectors in Indonesia. In terms of fishery production, Indonesia ranked second after China. Total Indonesian fishery production reached 19,0 million tonnes in 2012; about 5.7 million tonnes are contributed by marine capture fisheries[2].

Indonesian exports of fish and fishery products reached 1.26 million tonnes with value of USD 4.18 billion. Commodities with the largest export volume is the group of tuna, eastern little tuna, and skipjack fish (called *tuna-tongkol-cakalang* in Indonesian, or TTC), which reached 209 thousand tonnes with export value of USD 765 million, followed by shrimp which reached 162 thousand tonnes and export value of USD 1.68 billion [3].

Bitung City is one of fishing centres in Eastern Indonesia, particularly for the group of TTC. The production of capture fishery of Bitung City in 2012

reached 159.319 tonnes; about 78.5% or 125.062 tonnes were contributed by the group of TTC. The share of Bitung City in national fish production was accounted for 3.39% in 2012, but the share for the group of TTC was accounted for 11.0% for the same year. This condition indicates that Bitung City has a significant role in the national fish production for the group of TTC, which is the main export commodities of fisheries sector [4].

According to Witomo and Wardono [5], fishing is one of the most important economic activity in Bitung City. The potential fishery resources that can be accessed by fishermen of Bitung City are quite large because it includes two fisheries management area (FMA), i.e., FMA 715 (Gulf of Tomini, Maluku Sea, Halmahera Sea, Seram Sea and Gulf of Berau) and FMA 716 (Sulawesi Sea and Northern waters of Halmahera Island). However, the utilization of fishery resources is still not optimal.

Most fishing boats which are based in Bitung City are small tuna fishing boats with capacity ranging from 3 GT to 10 GT and use handline as fishing gear. In 2013, the number of small tuna fishing boats which were based in Bitung City reached 766 units [6]. This number of boats has increased rapidly in Bitung City

during the last one decade due to the increasing price of tuna as the main attraction for investment in this sector. However, the performance of the small-scale tuna fishing firms are diverse.

Theoretically, the performance of small firms can be affected by several factors. According to Structure-Conduct Performance (SCP) paradigm, market structure affects the firm behavior, then the firm behavior affects the firm performance [7].

The Resource-based View (RBV) suggests that the firm is a collection of resources and capabilities which are fundamental determinants of competitive advantage and firm performance. In general, a firm competes for greater resources and then use those resources to compete. Resources controlled by the firm enables it to formulate and implement strategies to improve the performance, i.e., the firm efficiency and effectiveness[8].

Peng *et al.* [9] states that the research to determine factors influencing the strategy (firm behavior) and firm performance in its broader scope is not enough to simply focus on industry conditions and firm resources and capabilities. They argues that institutional conditions as the battlefield for firms to compete are increasingly complex so that they suggest to researchers to broaden their perspectives by combining the three views, i.e., the industry-based view (SCP theory), resource-based view (RBV theory) and institution-based view (institutional theory) in examining factors influencing strategy and firm performance. Thus, the formulation of the firm strategy based on the combination of the three views (theories), which they call "strategy tripod, is performed on a more solid foundation.

In the context of SCP paradigm, the firm behavior can be defined as the strategy and policy towards market dynamics and response to actions taken by competitors [10]. In small firms, the firm behavior is reflected in the behavior of firm owners who also generally serves as the manager[11]. According to Covin [12] and Miles *et al.* [13], entrepreneurial orientation is a reflection of firm's strategic behavior, which includes innovation, risk taking, and proactiveness as key dimensions of entrepreneurial activity. Thus, entrepreneurial orientation can play a role as part of firm behavior that has a close relationship with firm performance.

The firm behavior in the market includes many aspects, among others, decisions related to products to

be offered to consumers, in particular the product type, design, and quality[14]. In this context, the quality assurance is part of firm behavior that could affect the firm performance.

This study aimed to examine the influence of firm resources, market structure and institutions on firm performance, both directly and indirectly through entrepreneurial orientation and quality assurance. It would also analyze the influence of entrepreneurial orientation and quality assurance on firm performance.

The paper is organized as follows. Section 2 provides literature review. This is followed by the research methodology in section 3 and the results and discussions in section 4. Finally, section 5 provides conclusions and recommendations.

LITERATURE REVIEW

Structure-Conduct-Performance Theory

Structure-Conduct-Performance (SCP) theory was developed by Mason in the 1930s and Bain in the 1950s. This theory was later refined further through Porter's Five Forces model [15]. According to SCP theory, the performance of an industry depends on firm behavior in the industry. Furthermore, the firm behavior in the industry depends on the market structure, i.e., factors that determine the level of market competition[7].

In the extended model, there are five components that make up SCP theory, i.e., the basic conditions, market structure, firm behavior, firm performance, and government policies. Firm performance is influenced by strategy or firm behavior, which includes price behavior, non-price behavior (product, promotion and innovation), as well as cooperation among firms in the industry. The firm behavior depends on the structure of relevant market. Market structure can be seen from the number of buyers and sellers as well as the existence of entry barriers. There are several basic conditions that affect the demand side of the market structure, such as the price elasticity on demand as well as the presence or absence of product substitution. From the supply side, the basic conditions which affect market structure is the raw material, technology, trade unions, product durability, and economies of scale. Government policies affect basic conditions, market structure and firm behavior. Government policies also affect firm performance through firm behavior [7].

Firm Resources

Firm resources can be defined as all assets, which include tangible and intangible assets as well as human and non human resources owned and controlled by the firm. By having resources, a firm can implement strategies to obtain added value[8].

The importance of firm resources to achieve better performance is described in resource-based view (RBV) of the firm. RBV approach states that internal factors are more important to a firm than external factors in order to achieve competitive advantage. Resources play an important role in helping the firm to exploit opportunities and neutralize threats in external environment[16].

Firm resources can be used as sources of competitive advantage if they are valuable, rare, difficult to imitate, and no strategic substitutes[8]. Such resources can become firm's unique or core competencies for maintaining a lasting competitive advantage[17]. David[16] adds that the high quality resources will be able to improve the effectiveness and efficiency of the firm so as to enhance its competitive advantage.

Market Structure

Market structure describes the market environment in which firm operates. It can be identified by the number and size distribution of buyers and sellers (market concentration), the existence of barriers to market entry, and the extent to which companies are integrated or diversified. Thus, the characteristics of competition contained in a market determines market structure [7].

The structure of the market can be measured by industry dynamism, i.e., changes in production/service technology, changes in customer demand, rate at which products/services are getting obsolete in the industry and actions of competitors [18]. Market structure can also be measured by the competition intensity, which includes the extent to which the business environment, price competition, quality and competitors' product novelty threatens the company's survival[19].

Competitive conditions, barriers to entry, rapid technological developments and sunk costs along with the degree of market competition plays a role in the formation of market structure as these are part of or closely linked to the main determinants of market structure. This means that all three elements, namely the degree of competition, market structure and market power, cannot easily be separated from one another[20].

Based on the understanding of the market structure and its elements, Polymeros *et al.* [21] concluded that the competitive conditions may represent the market structure in fishing industry. In this context, the components of price competition, promotion competition, reputation competition, customer demand, marketing constraints, and competitors' strengths can be used as elements in measuring market structure.

Institutions

In developing countries, small firms that dominate business population are often operating in a business environment characterized by high degree of uncertainty and high transaction costs. In such conditions, small businesses with limited resources tend to avoid the risk of uncertainty in the environment [22]. The existence of a high degree of uncertainty makes small businesses experiencing high economic costs. Institutions are formed to reduce the uncertainty by setting the "rules of the game" in the form of formal rules, informal norms, as well as various methods of enforcement[23].

In general, institutions are divided into two, namely formal and informal institutions. Formal institutions refer to the legal and political structure and the process that explicitly define and enforce rights, duties, responsibilities, and privileges of local residents, including business entities, and regulate mutual relations between them [24]. Formal institutions in the form of regulations are made in writing, executed by the government, and violations of these regulations are subject to legal sanctions [25]. On the contrary, informal or social institutions refer to the cultural factors that are respected and maintained jointly by community members in a particular area that serves as prohibitions or standards of behavior. The violation of these social norms results in social sanction [26].

Based on their understanding on formal institutions from the literature, Lindsay *et al.* [27] concludes that there are five dimensions that correspond to describe and measure formal institutions in connection with entrepreneurship and small firm development. The five dimensions are namely the respect and the rule of law, protection of property rights, government policy, quality of regulation and government support for small businesses. Furthermore, according to Polymeros *et al.* [21], in the context of fisheries sector, the relevant elements of formal institutions are government's policy on fisheries and regulatory costs.

According to Lee and Peterson [28], informal institutions within the scope of the business world and community includes beliefs, norms and behavioral orientation of firm owners are shaped by cultural factors. Lindsay *et al.* [27] which examined the informal institutions in small firms use only five dimensions, namely the performance orientation, future orientation, collectivism, humane orientation and uncertainty avoidance.

Orientation Entrepreneurship

Entrepreneurial orientation can be defined as firm strategic orientation that includes the practice of decision-making, managerial philosophy and entrepreneurial firm behavior[29]. Naldi *et al.* [30] states that entrepreneurial orientation is a process, practice and decision making activities in the organization leading to the establishment of new businesses or attempts to enter a new market. They stressed that entrepreneurial orientation is a strategic orientation, processes, methods and decision-making style that firm uses to act entrepreneurially.

The concept of entrepreneurial orientation formulated by Miller [31] illustrates that firms which act more innovative, risk-taking and proactive as a firm having entrepreneurial characteristics. Firms that adapt to turbulent and constantly changing environment through risk taking, innovative and proactive actions are likely able to achieve higher profitability and sustain growth compared with the companies that are not doing the same thing[32].

Quality Assurance

Today many firms adopt quality management in order to survive in the market and as a strategy to achieve excellence. The application of quality management in general had a positive impact on firm performance[33,34].

Quality assurance is part of the quality management or TQM. International Standards Organization (ISO) defines quality assurance as all planned and systematic actions necessary to provide adequate confidence that a product or service will meet the quality requirements. In other words, quality assurance is a strategic management function which establishes policies and tailor the programs to meet the goals set and give confidence that these measures are effectively implemented[35].

Bonnel [36] states that quality assurance is essential for the fishing industry. The term of quality

assurance implies that firm's activity has strategic value because its purpose is to plan products and their related control procedures in order to meet the standards or specifications and the products can meet the customer expectations. Sciortino and Ravikumar [35] assert that good fish handling starting from the process of catching up to the delivery of products to consumers is an important element for ensuring the quality of the final product. Sanitary standards, methods of treatment, and the combination of time and temperature during fish storage are significant quality factors.

System related to quality assurance such as traceability and eco-labeling, have received much attention in fishing industry. Quality assurance and quality certification is an important strategy for improving firm performance[37]. In keeping with the development in international market, the quality assurance of fishery products should include three main dimensions, i.e., environmental protection, production control, and food safety [21].

Firm Performance

Firm performance is the ultimate dependent variable of interest for researchers working in the field of management. In this context, measurement becomes important because it allows researchers and managers to evaluate the specific actions of firms in comparison with their competitors, and how firms evolve and perform over time[38].

Firm performance measures have a broad scope and involving a lot of aspects. In general, firm performance is divided into three main areas: (a) financial performance (profit, ROA, ROI, etc.), (b) product market performance (sales, market share, etc.), and (c) shareholder return (total shareholder return, economic value added, etc.) [38].

Most researchers assess firm performance using several indicators, but there are also researchers that use a single measure or conceptualizing the firm performance as a one-dimension construct. Regardless of these differences, there is a consensus in the field of marketing and strategic management that firm performance is a complex phenomenon [39]. Thus, performance measures can generally be viewed as a multidimensional[21].

Researchers in the field of management can measure firm performance by both objective and subjective. Subjective performance measurement through self-reporting can be done for several reasons. First, managers cannot provide objective performance

data during field interviews [40]. Second, the measurement difficulties inherent in certain objective measures can complicate comparisons (for example, profitability obtained depend on the firm's internal accounting practices, such as depreciation and overhead allocation)[40]. Third, decisions and actions of managers in general are guided primarily by the perception of firm performance and are not based on objective performance measures [41]. Fourth, there is empirical support for the reliability and validity of subjective performance measures [42].

Hypotheses

This research examined the following hypotheses:

- (1) Firm resources influence firm performance positively,
- (2) Firm resources influence firm performance positively through entrepreneurial orientation and quality assurance,
- (3) Market structure influences firm performance positively,
- (4) Market structure influences firm performance positively through entrepreneurial orientation and quality assurance,
- (5) Institutions influence firm performance positively,
- (6) Institutions influence firm performance positively through entrepreneurial orientation and quality assurance;
- (7) Entrepreneurial orientation influence firm performance positively, and
- (8) Quality assurance influences firm performance positively.

RESEARCH METHODOLOGY

This research was conducted in Bitung City on small-scale tuna fishing industry that used Bitung City fishing port as base station. The population consists of 766 small tuna fishing boats; from which 165 units were taken as sample using purposive sampling technique. Respondents were boat owners or skippers. Data were collected by using questionnaires and interviews. The questionnaire was designed using a Likert scale of 1 to 5.

The variables in this study are all latent variables or constructs and divided into two groups. The first group consists of three independent variables (exogenous), i.e., firm resources, market structure, and institutions, while the second group consists of three dependent variables (endogenous), i.e., entrepreneurial orientation, quality assurance, and firm performance. Firm resources (X1) are measured by six indicators

adapted from Barney [8] and Lahtinen [43], and are grouped into three dimensions, i.e., physical assets (X11), human resources (X12), and intangible assets (X13). Market structure (X2) is measured by nine indicators adapted from Polymeros *et al.* [21], and are grouped into three dimensions, i.e., competitive conditions (X21), barriers to entry (X22) and business constraints (X23). Institutions (X3) are measured by 15 indicators adapted from Lindsay *et al.* [27], Peng *et al.* [9] and Roxas and Chadee [44], and are grouped into four dimensions; i.e., regulations and government policies (X31), law enforcement (X32), performance and future orientation (X33), and collectivism and humane orientation (X34). Entrepreneurial orientation (Y1) is measured by six indicators adapted from Anderson *et al.* [29] and Miller [18], and are grouped into three dimensions, i.e., innovativeness (Y11), risk-taking (Y12), and proactiveness (Y13). Quality assurance (Y2) is measured by nine indicators adapted from Bonnel [36] and Polymeros *et al.* [21], and are grouped into three dimensions, i.e., food safety (Y21), production control (Y22), and environmental protection (Y23). Firm performance is measured by three indicators, i.e., sales (Y31), net income (Y32) and the return on investment (Y33), which are elements of sales and financial dimensions.

All instruments used to measure the variables were examined their validity and reliability. Validity testing was performed by calculating item-to-total correlation of each variable. If the correlation value (r) is greater than 0.3 or significant at the 5% error level, then the instrument items are declared valid. Reliability testing was carried out by calculating Cronbach's alphas. If the value reaches 0.6 or more, the instruments are declared reliable.

The analysis technique used was Partial Least Squares (PLS), which was performed by using SmartPLS 3 software. Steps of data analysis were as follows: (1) design the structural model, (2) design measurement models, (3) construct the path diagram, (4) convert the path diagram into a system of equations, (5) estimate path coefficients, loadings and weights, (6) evaluate the measurement models, and (7) evaluate the structural model.

RESULTS AND DISCUSSIONS

Characteristics of Respondents

Respondents in this study were owners or skippers of tuna boats (pump boats) which based in Bitung City fishing port. Most respondents were male (98.8%) because many of boat owners were also skippers. The majority of respondents were in the age

range of 30-50 years (67.6%), which is the productive age group. Educational level of respondents were relatively low with majority were elementary and junior high school graduates (61.1%). The tuna boats owned by respondents were varied in sizes, but all were in the category of small-scale fishing tuna firms. The largest group of tuna boats had tonnage of 5 – 7 GT (43.1%), followed by 8-10 GT (37.7%) and 3-5 GT (19.2%). Table 1 presents the characteristics of respondents that completed the survey.

Table 1: Characteristics of respondents

Characteristics	Category	Frequency	Percentage
Gender	Male	165	98.8
	Female	2	1.2
Age	< 30 years	26	15.6
	30 – < 40 years	52	31.1
	40 – 50 years	61	36.5
	> 50 years	28	16.8
Education	Elementary school	34	20.4
	Junior high school	68	40.7
	High school	63	37.7
	Diploma/Bachelor degree	2	1.2
Boat Capacity	3 - 5 GT	32	19.2
	5 - 7 GT	72	43.1
	8 - 10 GT	63	37.7

Validity and Reliability of Instrument

The instrument validity was assessed in terms of convergent validity by using item-to-total correlations for each variable. Items with correlation scores lower than 0.3 were considered not valid. The results of validity test gave correlation scores between 0.30 to 0.84. Therefore, all correlation values were acceptable for all variables and the instrument was considered valid. Further, the instrument reliability was assessed in terms of internal consistency by using Cronbach's alpha. A coefficient of greater than or equal to 0.60 was the preset as the acceptable criterion for the scale reliability. The results of reliability test gave Cronbach's alpha between 0.60 to 0.85. Based on these results, overall the research instrument was classified as valid and reliable.

Evaluation of Measurement Models

The construct validity was examined by performing convergent and discriminant validity tests. The measurement loadings obtained are in the range between 0.333 and 0.918. The test results presented in Table 2 show that all measurement loadings are statistically significant at 0.05 level. Therefore, all indicators are declared convergent valid.

Table 2: Convergent validity of latent variables

Variables	Indicators	Measurement Loadings
X1	X11	0.918
	X12	0.765
	X13	0.618
X2	X21	0.903
	X22	0.333
	X23	0.755
X3	X31	0.617
	X32	0.583
	X33	0.850
	X34	0.867
Y1	Y11	0.724
	Y12	0.783
	Y13	0.740
Y2	Y21	0.746
	Y22	0.747
	Y23	0.672
Y3	Y31	0.671
	Y32	0.722
	Y33	0.893

Further, the constructs were examined their discriminant validity by comparing the square root of AVE (average variance extracted) and the correlation among latent variables. The test result presented in Table 3 shows that the all square roots of AVE are greater than the correlations among latent variables. Therefore, all constructs are declared discriminant valid.

Table 3: Result of discriminant validity test

Variables	AVE	Sq. Root of AVE	X1	X2	X3	Y1	Y2	Y3
X1	0.604	0.777	1					
X2	0.499	0.706	0.200	1				
X3	0.549	0.741	0.375	0.691	1			
Y1	0.562	0.750	0.340	0.648	0.749	1		
Y2	0.522	0.722	0.278	0.565	0.574	0.530	1	
Y3	0.590	0.768	0.246	0.700	0.743	0.765	0.550	1

The construct reliability was examined by conducting composite reliability test. The test result presented in Table 4 shows that the composite reliability values are in the range of 0.725 and 0.825. Since all values obtained are greater than 0.7, the composite reliability is met.

Table 4: Result of composite reliability test

Variables	Composite Reliability
X1	0.817
X2	0.725
X3	0.825
Y1	0.793
Y2	0.766
Y3	0.809

Evaluation of Structural Models

The result of modeling presented in Table 5 and Figure 1 are used to test the eight hypotheses. The coefficient of determination (R^2) for Y1 and Y2 are 0.600 and 0.391, meaning that 60.0% of variance in entrepreneurial orientation variable and 39.1% variance in quality assurance variable can be explained by firm resources, market structure and institutions. The coefficient of determination for Y3 is 0.850, meaning

that 85.0% of variance in firm performance variable can be explained by firm resources, market structure, institutions, entrepreneurial orientation, and quality assurance. According to Hair *et al.* [45], the coefficient of determination in PLS-SEM of 0.75, 0.50, or 0.25 for endogenous latent variables can be respectively described as substantial, moderate, or weak. Therefore, the constructs of entrepreneurial orientation (Y1), quality assurance (Y2), and firm performance (Y3) are respectively considered good, rather weak, and very good.

Evaluation results shown in Table 5 indicate that five relationships are significant at $p < 0.05$ and two relationships are not significant at $p < 0.05$. The other one relationship, i.e., direct relationship between X1 and Y3 are significant at $p < 0.05$, but with negative path. The latent variable correlations presented in Table 6 show that the correlation between X1 and Y3 is positive with value of 0.246. Based on Hair *et al.* [45] explanation, this kind of situation indicates that there is a suppressor effect in which the variables Y1 and Y2 represents full mediation between X1 and Y3. Therefore, the hypothesis 1 is not supported, but the hypothesis 2 is fully supported.

Table 5. Result of composite reliability test

Hyp.	Relationship	Beta	SE	t	p-value	Decision
1	X1 → Y3	-0.113	0.038	2.953	0.003	Not supported
2	X1 → (Y1 & Y2) → Y3	0.046	0.022	2.061	0.040	Supported
3	X2 → Y3	0.077	0.054	1.420	0.156	Not supported
4	X2 → (Y1 & Y2) → Y3	0.140	0.041	3.395	0.001	Supported
5	X3 → Y3	0.433	0.056	7.784	0.000	Supported
6	X3 → (Y1 & Y2) → Y3	0.285	0.043	6.600	0.000	Supported
7	Y1 → Y3	0.523	0.050	10.478	0.000	Supported
8	Y2 → Y3	0.012	0.042	0.296	0.767	Not supported

Table 6. Latent variable correlations

	X1	X2	X3	Y1	Y2	Y3
X1	1					
X2	0.200	1				
X3	0.375	0.691	1			
Y1	0.340	0.648	0.749	1		
Y2	0.278	0.565	0.574	0.530	1	
Y3	0.246	0.700	0.843	0.865	0.550	1

The goodness assessment of PLS-SEM structural model is performed based on Q^2 predictive relevance obtained after applying blindfolding procedure. According to Hair *et al.* [45], Q^2 values

larger than 0 suggest that the model has predictive relevance for a certain endogenous construct. In contrast, values of 0 and below indicate a lack of predictive relevance. The Q^2 values obtained are 0.301,

0.191 and 0.487 for respective latent variables Y1, Y2 and Y3; therefore, the structural model of this study has

predictive relevance.

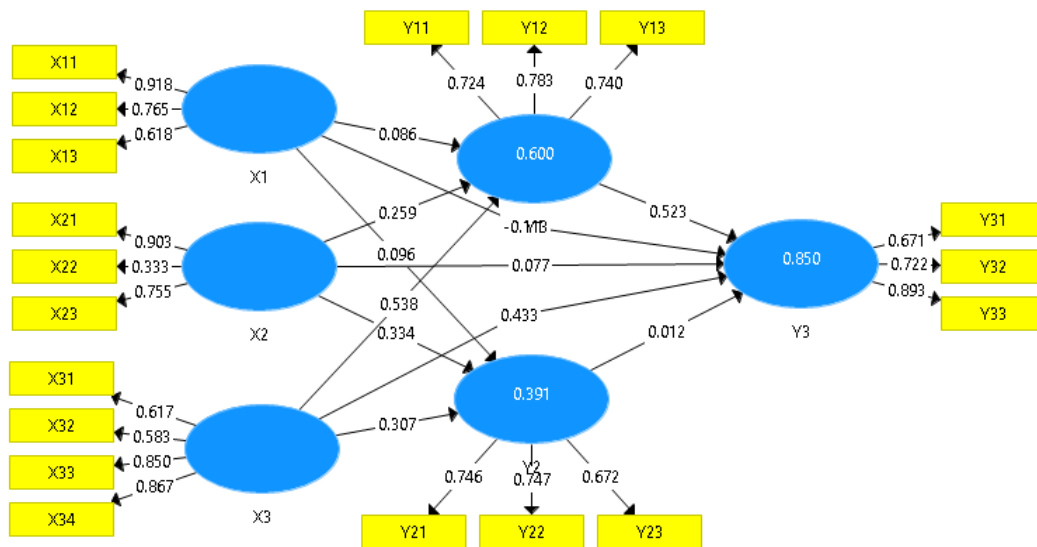


Fig-1: Measurement loadings, path coefficients and R² of structural model

The findings of the present study indicate that the firm resources does not directly influence the firm performance, but indirectly influence through entrepreneurial orientation and quality assurance. Resources owned by small-scale tuna fishing firms in Bitung City is divided into: capital, boats and fishing gear, the capacity and skills of skipper and crews (anglers), as well as knowledge about fishery business and managerial skills. Basically types of boats and gear owned by the firms are relatively similar. Likewise, firm owners generally have knowledge about fishing and managerial skills to run their businesses. Moreover, selling tuna fish caught are not difficult due to strong demand from the processing industry and tuna exporters. Capital needed for preparing the fishing operations can easily be provided by majority of firm owners. Resources owned that are quite different among small tuna fishing firms are the abilities of the skipper and crews as anglers. These types of resources are crucial because they determines the firm performance. Good and experienced skippers are generally able to make decision and direct the boat to the fishing area that may provide better catches. Likewise, good anglers usually have better skills (to pull the caught tuna up to the boat) and have endurance to work at sea for longer time. Although resources owned by the small-scale tuna fishing firms diverse, in general none of them can be categorized as "valuable, rare, inimitable and has no substitute." That is the reason that the present study does not support the hypothesis that firm resources affect firm performance positively.

The findings that firm resources indirectly influence the firm performance are consistent with the theory of Resource-based View (RBV). The firm's

ability to create and implement strategies to improve its efficiency and effectiveness depends on the resources owned [8]. There is a tendency that entrepreneurial orientation arises when the firm has sufficient resources. When firm grows and more opportunities are available, firm needs more resources in order to continue to be entrepreneurial oriented [18].

The results of this study reinforce the findings by Brown [46] who examined the relationship between firm resource and entrepreneurial orientation. The study concluded that the adequacy of resources was important to encourage the firm to be more entrepreneurial oriented and to improve the firm performance. The results also support the findings by Filser *et al.* [47] which concluded that the sustainable growth of small firms can only be achieved with an entrepreneurial orientation supported by resource availability.

The findings of this study in principle are consistent with the conception proposed by Mentzer *et al.* [48] and Li *et al.* [49]. The firm has a competitive advantage if it is able to produce a product or service at a lower cost with higher quality and shorter delivery times. Similarly, companies that offer high quality product can set premium price so as to improve its financial performance. Thus, the better the firm's quality assurance, the better its performance.

In the context of this study, resources are needed by the firm to focus on entrepreneurial-oriented activities and implement quality assurance processes on an ongoing basis. Fishing operations are basically heavily laden with entrepreneurial orientation because of the risk while at sea. Innovation and proactive action

are also required because the firm owner has limitation in providing resources. Because tuna catches are classified as food, the quality assurance becomes one of the crucial aspects for the sake of food security to be purchased by consumers, smooth production process and the fulfillment of the requirements demanded by buyers and consumers, especially from the United States and European countries. The firm resource availability in sufficient amount will push forward the firm commitment to improve quality through a quality assurance program. Thus the entrepreneurial oriented firm which implements quality assurance consequently tends to be able to achieve good performance.

In relation with these results, there are two things that can be put forward. First, the efficiency through differentiation can be achieved when tuna fishing boat can quickly catch several large fish so that they can immediately return to port to sell the fish at the highest price (grade A). Second, the efficiency through lower costs can be achieved if the boat is operated by an experienced skipper and supported by good anglers. Based on conditions on the ground, both things can happen although not often because the number of fish caught is a *random* variable and cannot be predicted from the beginning.

The findings of this research also support the SCP theory which argues that market structure affects the firm behavior, and the firm behavior affects the firm performance because entrepreneurial orientation can be categorized as a part of the firm behavior (conduct). Entrepreneurial orientation is seen as the action reflecting the firm's strategic orientation through the process, methods and style decisions that are more innovative, risk-taking and proactive [32].

The small-scale tuna fishing industry in Bitung City is basically very dynamic. In such conditions, many business opportunities may arise and at the same time they creates uncertainty. Assuming that market conditions are competitive and business prospects are good, the firm can strengthen its position and competitiveness in the market and achieve better performance through entrepreneurial orientation.

Firms having entrepreneurial orientation tend to take advantage of new opportunities in the market and carry out a more risky venture with the motivation to obtain greater benefits[18,32]. At times when tuna price was high which was seen as an opportunity by the firm owners, they tend to take advantage of these business opportunities by increasing production and productivity, among others by spending more time for fishing at sea and exploring new fishing areas known to have large potential of fish resources. The actions taken by the firm owners were also considered risky because they

have to prepare basic supplies for fishing with larger quantities. If the business owners do not have sufficient fund, they did not hesitate to go into debt or seek tuna processors or exporters that are willing to provide temporary loans to them.

These findings support the theory of institutions theory pioneered by North [50] and developed by other experts. According to this theory, a country's economic performance and the behavior and performance of entrepreneurial-based small businesses can be explained by the formal and informal institutions. Aldrich and Wiedenmayer [51] states that entrepreneurship can be effectively created or destroyed by a country's institutions. In the context of this study, the performance small-scale tuna fishing firms which are based on entrepreneurship is much depend on the quality of existing institutions, both formal and informal.

The results of this study reinforce the findings by Roxas and Chadee [44], which examined the influence of institutions and entrepreneurial orientation on the firm performance engaged in tourism in the Philippines. The findings of their research were that institutions affected the firm performance positively, both directly and indirectly through entrepreneurial orientation.

In the context of this study, several explanations can be advanced. *First*, this study measures the quality of formal institutions based on dimensions of regulation and governmental policy and law enforcement. Both of these are very important for the fishing industry. Good government policy and regulation help reduce the uncertainty in fishing industry, in addition to manage fisheries resources so that they remain productive and sustainable. Law enforcement implemented by competent authorities help regulate the behavior of firm owners so that they keep conducting their fishing activities legally. *Second*, this study assesses informal institutions based on two dimensions, i.e., performance and future orientation, and collectivism and humane orientation.

Although firm owners, skippers and boat crews have relatively low levels of education, they are performance oriented. They appreciate their colleagues who have achieved better performance due to the hard work, innovation, etc. If possible, they will imitate the actions of their colleagues who had been successful. Similarly, the level of competition among the fishermen are less visible and what more evident is togetherness and concern for others. For example, if there is a crew who can not go fishing because of illness or other reasons, his colleagues will raise funds to be given to the crew. Furthermore, when some crews catch a large

amount of tuna in a fishing ground, they will inform their positions to their friend in other boats via radio. All conditions that have been described positively affect the industry performance.

CONCLUSIONS

Based on the results and discussions, this research concludes the followings.

1. Firm resources and market structure do not influence the firm performance directly, but they indirectly positively influence the firm performance through entrepreneurial orientation and quality assurance.
2. Institutions positively influence the firm performance, both directly and indirectly through entrepreneurial orientation and quality assurance.
3. Entrepreneurial orientation directly positively influence the firm performance, but quality assurance does not influence firm performance.

RECOMMENDATIONS

The following recommendations are offered for relevant parties.

1. For researchers interested in the study of fishing industry development, this research model can be modified by including one or two new variables, such as the adequacy of infrastructure and service quality in fishing port.
2. For firm owners and/or managers of small-scale tuna fishing firms in Bitung City, they should (a) ensure the availability of all resources necessary for fishing operations, (b) enhance the entrepreneurial orientation by pursuing new opportunities in an innovative, risk-taking and proactive manner; and (c) improve the quality assurance so that the catch can be sold relatively easy and quick at a high price level.
3. For heads of various government agencies responsible for regulating and supervising the fishing industry in Bitung City, they should observe and monitor the market structure as well as assess and improve the existing institutions in order to keep it functioning properly and conducive for business.

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