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Uncertain Supply Chain Management

Cooperation in the supply chain of fisheries: A case study of the north central region, Vietnam

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CHRONICLE	ABSTRACT
	The aim of this study was focused on cooperation in the fisheries supply chain. Specifically, the study of the factors affecting the benefits of cooperation and the relationship between the factors. The study has found that there are six factors affecting supply chain cooperation: trust, distance, strategies, policies, power, and maturity. The research was conducted with 300 seafood producers in the North Central Region, Vietnam. The study results show that trust, distance, strategies, policies, power, and maturity have a direct impact on the collaboration in the fishery supply chain.

1. Introduction

The importance of supply chain management is more focused when organizations recognize the benefits of cooperation (Power, 2005). As the economy is growing, specialization is increasing, organizations will tend to increase cooperation with other members in the supply chain to use the quality resources of their partners at a lower cost than self-manufacturing but inefficient (Abiola, 2008).As a result, organizations increasingly want to get closer to each other to effectively manage supply and distribution channels to both optimize costs and increase customer satisfaction, contributing to improving product competitiveness and improve the profitability of participating organizations (Simatupang et al., 2002). Therefore, many researchers agree that: competition is taking place between supply chains and supply chains, not between businesses and enterprises (Manuj et al., 2008). Many researchers have tried to find and identify the prerequisites for organizations participating in supply chain cooperation (Albino, 2008; Ding, 2011; Zhu, 2010). Supply chain cooperation is due to global competitive pressures or risks due to environmental fluctuations including changes in supply, demand and technology, opportunities from new markets (Tate, 2010; Chen 2017). However, according to experts in the seafood industry, in addition to global competitive pressure, other environmental pressures also have a great impact on the level of cooperation between members in the supply chain such as risks related to supply chains such as supply, markets, information, and the environment (Garcia, 2010). In addition, the business strategy of the business is one of the most important factors determining the degree of cooperation with member partners in the supply chain (Ellram, 1990). The North Central Region is the low-lying sector of the country's economy (VCCI, 2020). This area has 15% of the country's population but just 5.5 percent of the country's companies. The upper and lower layers of the North Central Region are home to a variety of marine migratory fish, the majority of which are shrimp, crabs, crabs, clams, squid, and... People in the North Central Region exploit and produce with increasing catches. According to General Department of Fisheries statistics, the entire region has the potential to develop nearly 163900 ha of aquaculture areas, with nearly 115,600 ha for freshwater farming and over 48,300 ha for salty and brackish water farming and tens of millions of hectares of unexploited reservoir water surface with 194 reservoirs. According to the Directorate of Fisheries (2020), the quality of economic growth in the fisheries sector in this area is primarily based on growth factors in width, rather than quantity; as a result, efficiency is low. Growth in average fishing output in the period 2010-2014 is still primarily determined by an increase in the number of fishing boats, with productivity

growth accounting for less than 10%. Growth in output value is primarily determined by an increase in production, with price increases accounting for a low proportion of 15%. Currently, there are quite a few studies on the relationship between supply chain collaboration and business performance (Ratajczak-Mrozek, 2012; Wadhwa, 2010). However, the studies did not show consistent results. Therefore, it is necessary to clearly define the factors influencing supply chain cooperation and further test in other contexts. Therefore, the study will clarify the supply chain cooperation through the study and better identification of the influencing factors both internal and external.

2. Literature review and Hypothesis

2.1. Supply chain collaboration

In supply chain management, supply chain collaboration is defined as two or more autonomous firms working jointly to plan and execute supply chain operations. It can deliver substantial benefits and advantages to its partners (Cao et al., 2011). Due to the asymmetry between supply and demand, there are always contradictions in supply chains (Gan, 2010). This is explained by the fact that each supply chain consists of independent organizations involved in the flows of goods, services, and related information as well as financial flows from the point of origin to the final customer. Organizational members are often involved in supply chain management to effectively plan, implement, and control flows to meet customer needs (Lambert,2000). Conflicts in the chain stem from members' distrust of each other, difficulties in relationships that occur before and during cooperation (Simatupang, 2002). Besides, the cause of conflict is also due to the difference in attitudes and structure and the source of power, coercive or non-coercive, also affects the disagreement among the members of the chain (Zhao et al., 2008). Through the results of published studies, it is possible to draw out several factors that researchers have discovered and tested separately, including trust, distance, strategies, policies, power, and maturity.

2.2. Hypothesis

Trust reflects a trust in a partner and involves some aspect of weakness and uncertainty in the trusted partner (Smith, 1997). A successful relationship is characterized by mutual trust, and businesses that trust each other are consistently profitable, serve customers better, and are more adaptable (Sin et al., 2002). Tangible assets can play an important role in fostering trust among the partners of intermediaries (Clark, 1999). While later studies suggested that trust is a function of civic relations behavior and frequent interactions. Both above studies emphasize the trust between organizations to minimize the cost of administrative procedures (Lui, 2004).

H1: *Trust has an impact on supply chain collaboration.*

Distance between partners in a supply chain means to refer to the geographical, cultural, and organizational distances between the partners in that supply chain (van Donk, 2010). Distance in general has a certain effect on cooperation in the supply chain. That is, the closer the distance between partners, the closer the partners have similarities in culture, language, and business practices. So that makes it easier for partners to choose each other and cooperate with each other.

H2: *Distance has an impact on supply chain collaboration.*

When researching the supply chain of cooperation, the cooperation strategy includes 4 basic contents, which are: the strategy of mergers and acquisitions, the strategy of capital rationalization, the strategy of optimizing the combinations on production, and the new product introduction strategy (Anderson, 2004). Cooperation strategies in the series include basic activities such as planning, forecasting and supplementing the content of cooperation in the supply chain (Stadtler, 2005).

H3: *Strategies have an impact on supply chain collaboration.*

Any business that wants to participate in the supply chain in the industry but does not meet national and international policies and laws will find it difficult to cooperate (Tate, 2010). In the complex and extensive operation of the supply chain, there is a need to improve cooperation between businesses and the Government, nationally and internationally, to control and manage risks in the global supply chain.

H4: *Policies have an impact on supply chain collaboration.*

Power is seen as central to all business relationships (Hingley, 2005). The power of a business or organization over a partner is determined by the extent to which the business or organization depends on specific resources on another (Inkpen et al 1997). In a relationship, when one party with more power is more likely to pressure the less powerful party to make decisions in favor of the more powerful party (Kumar, 1996). In the supply chain there is not a strong relationship between power and dependence. In the relationship between the buyer and the seller, the more unilateral power, the higher the use of a contract with clear and detailed terms.

H5: *Power has an impact on supply chain collaboration.*

Increasing supply chain interaction as much as possible leads to less uncertainty in supply and demand forecasts and improved business performance (Wilding, 1998). This is the best way to pursue and gain competitive advantage. The characteristics of relationship maturation are: predictability, competence, control power, effectiveness, and efficiency (De Treville et al., 2004).

H6: *Maturity has an impact on supply chain collaboration.*
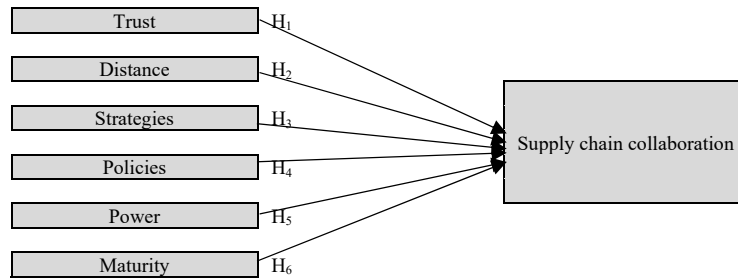
Fig. 1. Theoretical framework

3. Methodology

3.1. Sample and Data Collection

Not only in the North Central Region, but also in Vietnam, the fishing industry has a lot of room for development. Since the study focused on the impact of supply chain cooperation on transport performance in the fisheries sector, those interviewed were those who caught, farmed, and traded aquatic products such as shrimp, fish, different types of cockles, and so on. The survey collected 300 questionnaires in six provinces in the North Central Region: Thanh Hoa (55 samples), Nghe An (45 samples), Ha Tinh (50 samples), Quang Binh (45 samples), Quang Tri (55 samples), and Thua Thien - Hue (50 samples)

3.2. Method of Analysis

Application validation can be done by testing the measurement model as an external model and checking for reflection value and reliability. The convergence value with a factor loading of more than 0.6 and the average vaiance extracted (AVE) of more than 0.5 (Chin, 1995) can be used to determine how well the value is obtained. Then, if Cronbach's alpha and composite reliability (CR) are both greater than 0.7, a structure meets the reliability criterion (Hair, et al., 2014). This research then used Structural Equation Model (SEM) analysis with SmartPLS 3.0 software to evaluate the data and test hypotheses.

4. Results

4.1. Measurement Model

Table 1 presents details of som loading factors, t-vlue, mean and VIF for all components of the survey.

Table 1
Descriptive statistics, reliability, and validity

Code	Items	Factor's loading	t-value	Mean	VIF
	Trust (Cronbach's alpha: 0.868, CR: 0.919, AVE: 0.791)				
T1	Improve the common good	0.875	63.671	3.47	2.221
T2	Effectively balance supply and demand	0.899	78.790	3.46	2.400
T3	Trust partners	0.895	77.142	3.45	2.227
	Distance (Cronbach's alpha: 0.632, CR: 0.844, AVE: 0.730)				
D1	Cultural	0.824	21.643	3.37	1.272
D2	Geography	0.883	35.844	3.34	1.272
	Strategies (Cronbach's alpha: 0.820, CR: 0.893, AVE: 0.735)				
S1	Merger and acquisition strategy	0.841	34.398	2.82	1.753
S2	Capital rationalization strategy	0.858	37.747	2.64	1.789
S3	New product introduction strategy	0.873	44.295	2.78	2.036
	Policies (Cronbach's alpha: 0.773, CR: 0.868, AVE: 0.687)				
P1	Non-tariff barriers	0.804	24,600	3.75	1.526
P2	Traceability of origin	0.837	33.201	3.37	1.604
P3	Economic development environment	0.845	32.333	3.49	1.638
	Power (Cronbach's alpha: 0.768, CR: 0.865, AVE: 0.682)				
Po1	Oppress	0.811	17.268	2.88	1.520
Po2	Support	0.858	25.596	2.97	1.605
Po3	Interactive	0.807	16.073	2.72	1.585
	Maturity (Cronbach's alpha: 0.779, CR: 0.870, AVE: 0.691)				
M1	Demand forecast	0.795	21.828	3.37	1.569
M2	Increase competitive advantage	0.818	29.091	3.31	1.588
M3	Improve business efficiency	0.879	16.073	3.41	1.695
	Supply chain collaboration (Cronbach's alpha: 0.827, CR: 0.885, AVE: 0.659)				
SCC1	Improve labor productivity	0.806	32.735	3.23	1.737
SCC2	Increase market share	0.824	42.930	3.12	1.875
SCC3	Increase profits	0.800	34.703	3.16	1.701
SCC4	Improve labor productivity	0.817	39.502	3.06	1.822

4.2. Hypothesis Test Results

Table 2 and Fig. 2 present details of testing the hypotheses of the survey.

Table 2
Hypothesis Test

	Hypothesis Test	**P_value**	**Results**
H1	Trust has an impact on supply chain collaboration	0.000	Supported
H2	Distance has an impact on supply chain collaboration	0.039	Supported
H3	Strategies has an impact on supply chain collaboration	0.000	Supported
H4	Policies has an impact on supply chain collaboration	0.008	Supported
H5	Power has an impact on supply chain collaboration	0.004	Supported
H6	Maturity has an impact on supply chain collaboration	0.000	Supported
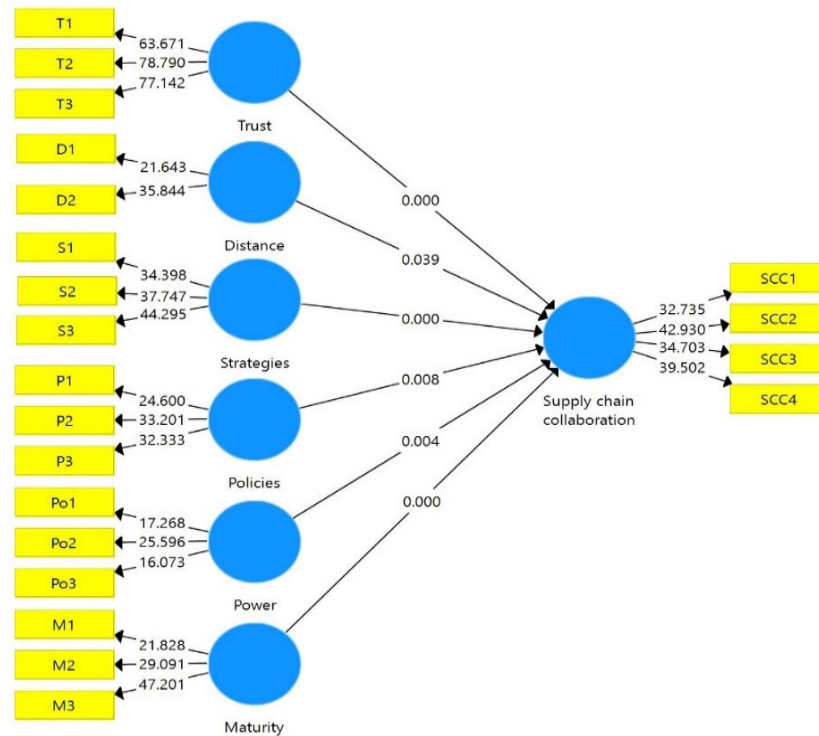
Fig. 2. The results of the path model

According to the results, all hypotheses of the survey have been confirmed.

5. Conclusion

Enterprises must pay attention to building corporate image to enhance the level of trust in transactions with partners. It includes brands, financial capabilities, payment methods, payment methods, shipping methods, shared information, and the ability to flexibly respond to changing needs. In particular, affirming the brand value in the development of Vietnam's seafood processing industry by promoting the application of technology in business, improving production techniques, and constantly focusing on improving the quality source of raw materials for processing.

Through research, power here implies the size, influence of enterprises in the industry and outside the industry, the position of enterprises, and current ownership in which economic sector? If the enterprise always focuses on developing the above aspects, the capacity of the enterprise is highly appreciated, and through that, the enterprise is eligible to strengthen and increase its power. Over the partner to achieve the target attract cooperation voluntarily as well as put pressure on partners to actively cooperate with enterprises in the chain.

Research shows that in addition to the main actors in the seafood supply chain, including suppliers, manufacturers, and distributors. For the supply chain of the industry to be effective, it is necessary to connect with relevant government agencies and industry associations. The reason is that the Government's policies have a certain influence on encouraging or discouraging enterprises to cooperate with each other to increase competitiveness and facilitate development in a proactive and sustainable manner.

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