

RECOMMENDATIONS ENHANCING THE ADDED VALUE CHAIN OF THE AQUACULTURE ENTERPRISES IN VIETNAM

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ABSTRACT

In Vietnam, Gross Domestic Product (GDP) growing, disposable income, levels and use of consumer credit and inequality of wealth are the major components affecting the fish supply chain. Developed countries constitute the main outlets for fish and fishery products. United States, the largest single market for fish and fishery products and their high level of per capita fish consumption places year round demand. Besides, Japan plays an important role as second largest single country market with growing potentials. Japan's declining fish consumption followed by low demand on high valued species changes the trade flows to other growing markets. Especially growing economies and expanding upper middle class in Asia places high demand on fish and fishery products. In developing countries, fish plays a major role in the diet of poorer communities as a principal source of protein. The objectives of this paper were not only to look into the relevant literature but also to find common ground regarding the added value chain of the aquaculture enterprises in Vietnam and reports the results of a survey of 180 the aquaculture enterprises in Vietnam.

In this paper, the researchers used analytical method of explore factor analysis to determining that are components of the added value chain of the aquaculture enterprises in Vietnam. This paper conducted during the time from July 2014 to December, 2015. The research result showed that there were 180 the aquaculture enterprises in Vietnam interviewed but 150 processed and answered 12 questions. The researcher had analyzed KMO test, the result of KMO analysis used for multiple regression analysis. Enterprises' responses were measured through an adapted questionnaire on a 5-point Likert scale. Hard copy and online questionnaire were distributed among enterprises in Vietnam. In addition, the regression analysis results showed that there were three factors, which included of factors following: State (NN), Enterprise (DN) and Association (HH) actually affected the added value chain of the aquaculture enterprises in Vietnam with 5 % significance level. The research results were processed from SPSS 20.0 software. The parameters of the model estimated by Least - Squares Method tested for the model assumption with 5% significance level.

Keywords: The fish, added value, the aquaculture enterprises, value chain and LHU.

Introduction

As a country that has many advantages in the production of fishery products, Vietnam is an increasingly important position on the world market with specific products such as fish, brackish water shrimp, tuna, squid, octopus, mollusks... However, in the process of development, Vietnam's seafood has exposed serious gaps in many production lines, processing technologies and preservation of post-harvest products, ensure quality and food safety... Along with the impact of international economic integration (joining WTO, TTP, FTA), Vietnam's fisheries will be under pressure increasingly fierce competition due to our country engaged in low value-added stages. Therefore, value-added approach through the construction and development of the fisheries value chain is becoming a critical requirement, contributing to successful restructuring of the fisheries sector towards higher value incremental and sustainable development. From that enhance participation and competitiveness of the country into the global value chain, achieve the objective of industrialization and modernization of rural agriculture.

In addition, the Value Chain approach can be a useful tool in the management of natural resources such as fisheries and aquaculture. It provides an analytical framework for crafting cohesive and inclusive strategies to guide the orderly development of the industry such that it benefits the environment and local business development. A value chain is a chain of activities and services required to bring a product or service from its conception to final customers, and final disposal after use (Hellin and Meijer, 2006; Kaplinsky and Morris, 2000). Value chains include input suppliers, producers, processors and buyers. They are supported by a range of technical, business and financial service providers. Value Chain Analysis (VCA) is a diagnostic tool, defined by Taylor (2005) as a “multi-dimensional assessment of the performance of value chains, including the analysis of product flows, information flows and the management and control of the value chain”. Such analysis draws the attention of the different stakeholders to the opportunities for improvement at different stages in the value chain.

Value chain analysis (VCA) has been proved to be a useful means to assess performance in different systems including (Macfadyen et al., 2012): Distributional issues and pro-poor and gender equitable growth (Mayoux and Mackie, 2008; Rubin et al., 2009; USAID, 2011); The relative importance of factors affecting competitiveness, and the costs and earnings of each cycle of the value chain; Identifying and analyzing gaps and weaknesses in value chain performance; and Identifying and suggesting appropriate upgrading, management and development strategies to improve value chain performance.

Thus in combination with the practical requirements of the teaching career, the author had boldly chosen the theme: *"Recommendations enhancing the added value chain of the aquaculture enterprises in Vietnam"*. As a paper for researching in the developing of the agriculture sector in the future.

Literature Review

A value chain is a set of activities that a firm operating in a specific industry performs in order to deliver a valuable product or service for the market. The concept comes from business management and was first described and popularized by Michael Porter in his 1985 best-seller, *Competitive Advantage: Creating and Sustaining Superior Performance*. The idea of the value chain based on the process view of organizations, the idea of seeing a manufacturing (or service) organization as a system, made up of subsystems each with inputs, transformation processes and outputs. Inputs, transformation processes, and outputs involve the acquisition and consumption of resources - money, labor, materials, equipment, buildings, land, administration and management. How value chain activities carried out determines costs and affects profits.

The concept of value chains as decision support tools added onto the competitive strategies paradigm developed by Porter as early as 1979. In Porter's value chains, Inbound Logistics, Operations, Outbound Logistics, Marketing and Sales, and Service categorized as primary activities. Secondary activities include Procurement, Human Resource management, Technological Development and Infrastructure (Porter 1985).

According to the OECD Secretary-General (Gurría, 2012) the emergence of global value chains (GVCs) in the late 1990s provided a catalyst for accelerated change in the landscape of international investment and trade, with major, far-reaching consequences on governments as well as enterprises (Gurría 2012).

Firm-level: The appropriate level for constructing a value chain is the business unit, not division or corporate level. Products pass through a chain of activities in order, and at each activity, the product gains some value. The chain of activities gives the products more added value than the sum of added values of all activities.

The activity of a diamond cutter can illustrate the difference between cost and the value chain. The cutting activity may have a low cost, but the activity adds much of the value to the product, since a rough diamond is significantly less valuable than a cut diamond. Typically, the described value chain and the documentation of processes, assessment and auditing of adherence to the process routines are at the core of the quality certification of the business, e.g. ISO 9001.

A firm's value chain forms a part of a larger stream of activities, which Porter calls a value system. A value system, or an industry value chain, includes the suppliers that provide the inputs necessary to the firm along with their value chains. After the firm creates products, these products pass through the value chains of distributors (which also have their own value chains), all the way to the customers. All parts of these chains are included in the value system. To achieve and sustain a competitive advantage, and to support that advantage with information technologies, a firm must understand every component of this value system.

The prominence of Value-chain analysis (VCA) as a useful tool of analysis in the fisheries, aquaculture and aquafeed sectors has increased during recent years (Christensen et al., 2011; Macfadyen et al., 2012; Mamun-Ur-Rashid et al., 2013; Nasr-Allah et al., 2014; Velu et al., 2009). This study was carried out 2013 to analyze the aquaculture feed value-chain in Egypt. The overall objectives of the study were to: 1) map the value-chain for fish feed industry; 2) describe the main actors and stakeholders within the chain; 3) determine value chain performance; 4) identify and synthesize the strengths and weaknesses of each link of the value-chain; and 5) suggest appropriate upgrading, management and development strategies. The study was carried out by a consultancy team organized by WorldFish under the Improving Employment and Incomes through Development of Egypt's Aquaculture Sector (IEIDEAS) project funded by the Swiss Agency for development and cooperation.

Methods of Research

This study used of quantitative research methods to survey the factors affecting the added value chain of the aquaculture enterprises in Vietnam. The results obtained from quantitative research processed by SPSS statistical software version 20.0.

Quantitative research methods describe and measure the level of occurrences based on numbers and calculations. Quantitative research is the collection of numerical data and exhibiting the view of relationship between theory and research as deductive, a predilection for natural science approach, and as having an objectivist conception of social reality. Therefore, this specific form of research uses the quantitative data to analysis.

After preliminary investigations, formal research is done by using quantitative methods questionnaire survey of 180 enterprises related the added value chain of the aquaculture enterprises in Vietnam and answered nearly 12 questions. The reason tested measurement models, model and test research hypotheses.

Data collected were tested by the reliability index (excluding variables with correlation coefficients lower < 0.30 and variable coefficient Cronbach's alpha < 0.60), factor analysis explored (remove the variable low load factor < 0.50). The hypothesis was tested through multiple regression analysis with linear Enter method.

Present research relies on self-reported data, but socially desirable responses have been found to be a major challenge when dealing with self-reported data (Thompson and Phua, 2005). In order to get more reliable research data, a short form of the Marlowe-Crowne social desirability scale (developed and validated by Rudmin, 1999) was used in the questionnaire as well.

The questionnaires were sent to enterprises related to the aquaculture enterprises, but it is obvious that there are different types of managers. This also gives evidence to the fact that the results of the study can be generalized to portray the added value chain of the aquaculture enterprises in Vietnam.

Research results

Descriptive Statistics and Cronbach's Alpha the factors affecting the added value chain of the aquaculture enterprises in Vietnam

Table 1: Descriptive Statistics and Cronbach's Alpha for State (NN)

Items	N	Std. Deviation
NN1: State has good development strategies for the added value chain of the aquaculture enterprises	150	.950
NN2: State has good planning for the added value chain of the aquaculture enterprises	150	.945
NN3: State has good control and support policies for the added value chain of the aquaculture enterprises	150	.948

Reliability Statistics

Cronbach's Alpha	N of Items
.799	3

Item-Total Statistics

Code	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
NN1	6.72	2.767	.664	.704
NN2	6.76	2.855	.632	.738
NN3	6.79	2.840	.635	.736

(Source: The researcher's collecting data and SPSS)

Table 1 showed that there were 180 enterprises related the added value chain of the aquaculture enterprises in Vietnam but 150 enterprises processed and answered 3 questions. Besides, Std. Deviation is around 1.0 and Cronbach's Alpha is 0.799 (> 0.6). This showed that the Data is very good for the next analysis.

Table 2: Descriptive Statistics and Cronbach's Alpha for Association (HH)

Items	N	Std. Deviation
HH1: Association must be present in the dumping case	150	.999
HH2: Association advising Government technical barriers to building commercial and brand building national fisheries	150	.552
HH3: Association links to business competitiveness and create added value for businesses in the supply chain exports	150	.609

Reliability Statistics

Cronbach's Alpha	N of Items
.770	3

Item-Total Statistics

Code	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
HH1	5.49	1.231	.546	.902
HH2	5.92	1.994	.733	.626
HH3	5.95	1.890	.704	.621

(Source: The researcher's collecting data and SPSS)

Table 2 showed that there were 180 enterprises related the added value chain of the aquaculture enterprises in Vietnam but 150 enterprises processed and answered 3 questions. Besides, Std. Deviation is around 1.0 and Cronbach's Alpha is 0.770 (> 0.6). This showed that the Data is very good for the next analysis.

Table 3: Descriptive Statistics and Cronbach's Alpha for the Enterprise (DN)

Items	N	Std. Deviation
DN1: Enterprises have good seed and cultivated technology	150	1.035
DN2: Enterprises have good food processing	150	1.002
DN3: Enterprises have good management for exporting	150	.969

Reliability Statistics

Cronbach's Alpha	N of Items
.852	3

Item-Total Statistics

Code	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
DN1	6.57	3.186	.735	.781
DN2	6.57	3.266	.746	.770
DN3	6.60	3.530	.687	.825

(Source: The researcher's collecting data and SPSS)

Table 3 showed that there were 180 enterprises related the added value chain of the aquaculture enterprises in Vietnam but 150 enterprises processed and answered 3 questions. Besides, Std. Deviation is around 1.0 and Cronbach's Alpha is 0.852 (> 0.6). This showed that the Data is very good for the next analysis.

Table 4: Descriptive Statistics and Cronbach's Alpha for the added value chain of the aquaculture enterprises (GTGT)

Items	N	Std. Deviation
GTGT1: Rating is based on the value added labor productivity	150	1.014
GTGT2: Assessing the added value based on capital productivity	150	.998
GTGT3: Assessing the added value based on total factor productivity	150	.961

Reliability Statistics

Cronbach's Alpha	N of Items
.846	3

Item-Total Statistics

Code	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
GTGT1	6.61	3.138	.722	.778
GTGT2	6.63	3.160	.735	.765
GTGT3	6.65	3.411	.684	.813

(Source: The researcher's collecting data and SPSS)

Table 4 showed that there were 180 enterprises related the added value chain of the aquaculture enterprises in Vietnam but 150 enterprises processed and answered 3 questions. Besides, Std. Deviation is around 1.0 and Cronbach's Alpha is 0.846 (> 0.6). This showed that the Data is very good for the next analysis.

Table 5: Regression for factors affecting the added value chain of the aquaculture enterprises in Vietnam (GTGT)

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate	Durbin-Watson
1	.981	.963	.962		.19521338	1.945

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	143.436	3	47.812	1254.638	.000
	Residual	5.564	146	.038		
	Total	149.000	149			

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-1.837E-016	.016		.000	1.000		
NN	.146	.033	.146	4.412	.000	.235	4.262
DN	.823	.032	.823	25.336	.000	.242	4.124
HH	.053	.019	.053	2.775	.006	.699	1.430

(Source: The researcher's collecting data and SPSS)

The table 5 showed the coefficient of adjustment $R^2 = 0.962$ (verification $F = 1254.638$, significance < 0.05); which means 96.2 % of the variable Y shift is explained by two independent variables (Xi). The coefficient of Durbin - Watson ($d = 1.945$). Results showed that all independent variables affecting the added value chain of the aquaculture enterprises in Vietnam (GTGT) with significance level 5 %. Verifying the conformity of the model showed the multicollinearity did not violate ($VIF < 10$).

Conclusions and recommendations

Conclusions

Regression analysis is a statistical analysis to determine whether the independent variables (variables notes or explanatory variables) provided for the dependent variables (variables overs, variables explain) how. In addition, regression analysis is a statistical model used to predict the value of the dependent variable (variable dependence), also known as variable results based on the value of at least one independent variable (independence variable), also known as variable causes. If the regression model analyzes the dependence of 1 on 1 dependent variable independent variable called single regression, if more independent variables is called multiple regression. Linear regression is a regression model in which the relationship between the variables is represented by a straight line (a straight line is the line that best fits the data). Based on the results of the linear regression analysis multivariate variables above, the authors have some comments as follows:

First, the results of the regression analysis showed that table 5 of calibration coefficients determined statistically significant and reflects data reliability. In addition, the coefficient of determination adjusted 96.2 %. State (NN), Enterprise (DN) and Association (HH) affected the added value chain of the aquaculture

enterprises in Vietnam with 5 % significance level increased to 96.2 %; the remaining 3.8 % is due to other factors not included in the model. Among them, the most powerful element is the enterprise (DN), followed by the elements of the State (NN) and finally the Association (HH). Thus, proposing recommendations or solutions to the priority of the variables in turn as follows: businesses, governments and associations will improve the added value of the business.

Recommendations

Recommendations for State

Vietnam State plays a key role to develop mechanisms and policies to create a legal environment for healthy competition for agents involved in the chain forms of the fisheries value chain through vertical integration and horizontal product value chain. Specifically: Cross-linking is linking the objects involved in the process of production and business; Links are links along the path of the product from producer to consumer.

Vietnam State continues planning concentrated breeding areas, large-scale, disease-free seed production areas and quality standards for the aquaculture sector. Vietnam State continues planning the exploitation and conservation of species of high economic value, the major export products in the field of fisheries in order to promote efficiency in vertical integration and cross-linking.

Vietnam State continues supporting for connecting and developing vertical integration, especially among leading enterprises with the production teams of fishermen, aquaculturists, to ensure stable output and input materials reach high quality: link the participating actors in the chain links along with seafood sales contract; Linking the chain support to upgrading (crosslinked) through contracts with processors in the short term, with producers (farmers/fishermen) in the long term, which stresses responsibility of each party. Traders to enhance the role of mediation and encourage them to participate in the value chain to promote enhanced cooperation in the value chain.

Vietnam State continues to organize the market, systems and distribution channels fishery products: The construction of the distribution system is the "chain" has always been important but the weakness in the current chain. The main thing is still lacking the necessary link between farmers and enterprises purchasing and distribution as well as lack of vision on the construction of distribution networks. Therefore, one solution is upgrading the system needs good organization and product distribution channels.

Vietnam State continues to strengthen the capacity of industry associations and enterprises in the context of economic integration: Strengthening the role of industry associations, the cooperatives and consulting organizations is of great significance, plays an important role in linking and coordinating the interests of the chain actors, strengthening the capacity of the chain. Currently, the majority of sectors are several associations and associations has worked well in the proposals to the Government on the development policy of the sector. However, the association should focus on capacity building awareness among the participants about the benefits join chain links; provide enhanced market information and business secrets. Need to focus on improving the bargaining power to participate in the chain smoothly and increasingly high status, support for membership in the struggle and deal with international trade barriers. Vietnam State continues being proactive and empowering participation in associations and international organizations under the agricultural sector. At the same time, need to enlist the help of technical international organizations in the construction and development of the chain.

Vietnam State continues improving the policy environment; capacity building of law enforcement and other regulations: State policy should address the problems of the immediate interests of fishermen/farmers, while the direction and guidance of the long chain link long, which are regulated management, such a policy limiting mining vessels, closed season regulations, the ban/restrict fishing; credit support policies, insurance, policies to attract FDI in the fisheries sector... should be strengthened to support the actors involved in the agricultural chain, the implementation of regulations on food safety and hygiene products, in testing and quality certification, building and brand development. Increase the support of the State in the implementation of regulations on food safety, product quality certification and brand development.

Recommendations for enterprises

Enterprise's nuclear fisheries' processing is of the fisheries value chain, agents involved in the chain is the satellite of the fisheries value chain, the satellite associated with the agent through support policies of the State and State protection through economic contracts.

The selling price of the final product that each agent involved in the chain of the fisheries value chain not lower the production cost of the product, especially the export price of the final product to the consumer, if the price does not guarantee a profit the links of the chain operation will fail and unsustainable. Therefore, the final product's price should have the consent of the actors involved in the chain of the fisheries value chain.

Pay attention to upgrade the agent engaged in in-depth value chain (value added products) instead of the width (to increase production to increase in value) on the basis of compliance signals market in order to minimize the situation "the season fell, crop prices" through the joint venture, association to enhance the competitiveness of participating global value chain.

Export processing enterprises need transparency in the provision of market information and product quality requirements of customers for the agents involved in the chain of the fisheries value chain to organize the production, procurement, storage and processing into products to meet the requirements of the market and customers, contribute to ensuring seafood chain link sustainable development and sustainable.

Good governance of the fisheries value chain through research, negotiating the merger or dissolution of a number of agents to ensure streamlined of the fisheries value chain, fastest, best quality and highest efficiency in order to take full advantage most of the opportunities and avoid the maximum the challenges of the integration process. In particular, the study merger and dissolution of some enterprises do business the fisheries processing grab, dumping, unfair competition.

Recommendations for Association

Association should have good solutions for the production/processing: Investment in research to improve seed quality, disease-free seed production. Organize production according to link business model - aquaculture households. Improve quality; ensure food safety, the international standards. Association should have good solutions for development of processing industry of value-added products.

Association should have good solutions for the development of market solutions and products: Improving competitiveness. Association should have good solutions for trade promotion and expanding

export markets. Support for the certification and branding. Besides, Association should have good solutions for strengthening vertical integration chain management and aquaculture. Association should have good solutions for establishment of industry associations. Improve the business environment through tax policy, credit, enhancing the role of the association, building and developing exchanges some staples such as brackish water shrimp, catfish; provide pricing information, enhance transparency in the market.

Solutions for the production/processing: Investment in research and development of mining technology, product storage after harvest. Organize production according to the model associated teams, cooperative production. Improve quality; ensure food safety, the international standards. Association should have good solutions for development of processing industry of value-added products. The development of market solutions and products: Promote trade promotion and expanding export markets. Association should have good solutions for brand developing. Improve the business environment through tax policy, credit, enhancing the role of the association, building and developing exchanges some staples such as brackish water shrimp, catfish; provide pricing information, enhance transparency in the market... As support developing processing industry and export of aquatic products from Vietnam, Association has been conducting various activities such as:

- Strengthening the development and building relationships membership system.
- Develop linkages with farmers and fishermen producing raw materials.
- Establishment of industry committees and strengthen activities of the committee going into specialized...
- Making a bridge between member enterprises with State management agencies. Timely processing of proposals of members, turned and guided members implement the guidelines and policies of the State
- Build and develop international relationships through participation in conferences, seminars and international forums. External information channels: electronic portal: <http://seafood.vasep.com.vn> and ASEAN SEAFOOD English magazine.
- Provide timely trade information to its members through regular issuance of Commercial Fisheries News Weekly, Journal of Commerce monthly Fisheries, Marine Products Export Reporting quarterly and update information on the electronic portal of the Association: www.vasep.com.vn

Recommendations for the future Research

The next research should survey more than 180 the aquaculture enterprises in Vietnam answered more than 12 questions. This helps the data that is more significant. The study topic is very wide and a big area. The next research should survey more than 12 the questions (items) in components affecting the added value chain of the aquaculture enterprises in Vietnam (GTGT). This would help to bring out the best features of this research.

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