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### **Analysis the influence degree of factors to competitiveness: Case study on Vietnam rice industry**

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#### **Abstract**

This study carried to analyze the influence of these factors on the competitiveness of the rice-industry in Vietnam. The research data collected from surveys of rice-producing households in various regions of Vietnam. The research results show that improving market signals, production, and business conditions will increase the rice industry's competitiveness the greatest. Next, it is also necessary to focus on strengthening the international economic integration of actors in the rice industry as well as the support from the state.

**Keywords:** Competitiveness, factors, Vietnam, rice industry

#### **1. Introduction**

The process of international economic integration required the movement and change of all sectors and fields, with the goal of stimulating the general development of the whole economy. Competition is a necessary factor to help reallocate social resources most effectively. Competition helps regulate the supply and demand of goods in the market, to stimulate and promote the application of science and technology to production in the market. Competitiveness research not only helps enterprises, industries, and countries understand the inevitable trend of the market, thereby making adjustments to meet market requirements. Besides, for businesses, improving competitiveness helps enterprises create a position in the market and dominate the market. For industries, when enterprises have good competitiveness, they will raise the industry's competitiveness through providing to enhancing the status of nations.

Vietnam is a country known as an agricultural country with about 70% of the people living and producing in the agriculture sector. Rice production is one of the strengths and main production sectors of Vietnam's agriculture sector. Vietnamese rice has been exported to 135 countries and territories; for the first time, Vietnam overtook Thailand to become the rice exporter world leader in 2011 with an export volume of 7.11 million tons, bringing the country 3.51 billion USD.

However, the rice industry is still facing many challenges and competition in both domestic and international markets. Furthermore, as Vietnam's integration deepens, the signed and implemented bilateral and multilateral agreements will open up great opportunities for Vietnam's rice industry to penetrate difficult markets such as the US, Japan, EU... But will also face many challenges such as concerns about food safety and quality and the degree of product positioning in the domestic market, technical barriers in developed countries.

Many factors affecting the competitiveness of the rice industry in Vietnam, the promotion of the positive influencing factors, and the limitation of the negative influencing factors will provide to improving the competitiveness of Vietnam's rice industry.

This study is done that purpose is studying the influence of these factors on the competitiveness of Vietnam's rice industry. From that based on any recommendation for to contribute to improving the competitiveness of the rice industry in Vietnam.

#### **2. Research overview**

Competitiveness of the rice industry in particular and competitiveness, in general, are influenced by many factors. These factors affect according to different degrees, in the research scope, the author reviews research on factors affecting the competitiveness of the rice industry according to groups of factors, as follows:

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### Firstly, the group of factors for agricultural production conditions

According to Vu Thi Minh (2004) <sup>[12]</sup>, Zhou and Jin (2009) <sup>[13]</sup>, Nguyen Huu Tin, and Phan Thi Giac Tam (2008) <sup>[6]</sup>, agricultural production conditions exceedingly affect the competitiveness of the rice industry. To comply with these standards is beyond the requirement for farmers; the production conditions also play a significant role in determining the industry's competitiveness.

### Second, the group of factors about household characteristics

The characteristic of agricultural production is that the production of the majority of individual households plays an important role in agricultural production in Vietnam. To improve the competitiveness of the rice industry, it is necessary to pay close attention to researching the characteristics of farmers to have reasonable methods to encourage and the impact changes the investment thinking of farmers, convincing them to invest in rice production to ensure safe quality. Farm household characteristics include age, education level, experience, gender, and household's size. These points are shown in the research of Nguyen Trong Hoai (2010) <sup>[12]</sup>, Bui Quang Binh (2008) <sup>[11]</sup>, Nguyen Quoc Nghi et al. (2011) <sup>[7]</sup>, Pham Anh Ngoc (2008), Okurut et al. (2002) <sup>[11]</sup>, Dinh Phi Ho (2006) <sup>[7]</sup>, Huynh Thanh Phuong (2011) <sup>[4]</sup>.

### Third, the group of factors about market signals

The market is the most important factor that has a decisive influence on all commodity production activities in general and agricultural crop production and trading in particular. The market in agricultural production of farm households includes two types, namely output market, and input market. (Vu Thi Minh, 2004) <sup>[12]</sup>.

### Fourth, the group of factors to support enterprises and merchants

Enterprises and merchants are supportive factors for farmers in the market, capital, science, and technology, etc. The support from enterprises and merchants is an essential symbiotic factor to improve the efficiency of investment in the development of agricultural production in general and the rice industry in particular.

According to Jayasinghe - Mudalige and Henson (2007), shows that the larger firms can implement food safety controls, whereas most small firms do not want to. Small enterprises that have enough capacity are not interested in the check of food safety, so farmers to implement it becomes more and more difficult. This considerably affects the competitiveness of the rice industry.

### Fifth, the group of factors for state support

The role of the state in promoting the rice industry's competitiveness shown in two contents: Management roles (Henson and Caswell, 1999; Ogun, 1994) <sup>[3, 10]</sup> and supporting roles: In addition to the function of promulgating and controlling the compliance with food safety regulations and standards, in developing countries, the state plays a considerable role in supporting manufacturers to apply the standards food safety including GAP (Hanak et al., 2002; Wannamolee, 2008). Supporting policies of the state for other actors in the production chain such as consumers are also mentioned (Srimanee and Routray, 2012).

## 3. Research Methods

### 3.1 Data collection methods

Primary data was collected through direct interviews with questionnaires for 350 rice farmers. The results, after filtering out unreliable observations, were left with 329 observations (a good response rate was 94%):

**Table 1:** Statistical sample survey

No.	Research area	Number of observations	Structure
1	Red river delta)	119	36.2%
2	Mekong River Delta)	121	36.8%
3	South Central Coast)	89	27.0%
Tổng		329	100%

**Source:** Survey results from 329 rice farmers in Vietnam

### 3.2 Data Analysis Methods

Research using the OLS regression method to analyze the influence level of factors about the competitiveness of Vietnam's rice sector. The results of data analysis are the foundation for the study and implementation of research objectives.

The dependent variable: The competitiveness of the rice sector (SC).

The independent variable: Relevant and supporting industry

factor (CO); Business and production conditions of rice industry (BC); The role of government (SS); Domestic and international demand conditions (MS); Factor of business strategy, structure, and competition (IEI).

## 4. Research results

With the data collected, the author analyzes the factors affecting the competitiveness of Vietnam's rice industry.

**Table 2:** Descriptive statistics of factors affecting the competitiveness of the rice industry

Symbols	Factors	Mean	Maximum	Minimum	Standard Deviation
CO	Relevant and supporting industry factor	3.574	5.000	1.000	0.811
BC	Business and production conditions of rice industry	3.511	4.857	1.857	0.857
SS	The role of government	3.889	5.000	1.600	0.789
MS	Domestic and international demand conditions	3.530	5.000	2.000	0.657
IEI	Factor of business strategy, structure, and competition	2.995	4.000	1.000	0.798
SC	Competitiveness of the rice industry	3.554	5.000	1.200	0.728

**Source:** Analysis of the survey results

Thus, it can be seen as among the five factors affecting the competitiveness of the rice industry, the State support factor assessed at the highest level, the international economic integration of rice industry actors is the lowest, the remaining parts are approximately equal with an average score of about 3.5 points.

The competitiveness of the rice industry is assessed at a low level with 3,554 points / 5 points. The accurately reflects the current competitive practice where imported products are

getting better and better quality than our own but at a much lower price. This is a tremendous risk that can cause a situation of "losing at home" for rice, which has been a strength of Vietnam for many decades.

After regression of the model of factors affecting the competitiveness of the rice industry with control variables including Age (age), Gender (gender), Labor (number of employees joined in the process rice supply) obtained the following results:

**Table 3:** Regression model

Model		Coefficients <sup>a</sup>						
		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-2,504	0.308		-8.136	0.000		
	BC	0.355	0.031	0.418	11.572	0.000	0.910	1.099
	CO	0.093	0.032	0.103	2.920	0.004	0.954	1.048
	MS	0.490	0.039	0.442	12.521	0.000	0.954	1.048
	IEI	0.359	0.032	0.394	11.259	0.000	0.973	1.028
	SS	0.287	0.034	0.311	8.541	0.000	0.898	1.114
	Gender	-0.158	0.057	-0.097	-2.789	0.006	0.982	1.018
	Age	0.006	0.003	0.079	2.235	0.026	0.950	1.053
	Labor	0.126	0.033	0.134	3.855	0.000	0.982	1.019
a. Dependent Variable: SC								
Adjusted R Square		0,610		F	65,123	Sig.	.000 <sup>b</sup>	

Source: Analysis of the survey results

#### i) Verifying the suitability of the model

Interpretation level of the model: The scale of the model to obtain adjusted R<sup>2</sup> results is 0.61. Thus, 61% change in rice sector competitiveness is explained by independent variables of the model.

Relevance level: According to the statistical results  $F = 65,123$  with  $Sig. = 0.000 < 0.01$  can conclude that the model is consistent with the actual data. In other words, the independent variables are linearly correlated with the dependent variable and 99% confidence level.

#### ii) Verifying the multi-collinearity phenomenon

According to the regression results table, the last column (VIF) on the multicollinearity test between the independent variables shows that all VIF coefficients are  $< 2$ , so there is no multicollinearity between the independent variables.

#### iii) Verifying the regression coefficient

##### The regression results show the variables

Production and business conditions of the rice industry (BC) with  $\beta = 0.355$  show that the good production conditions have a good effect on the competitiveness of the rice industry, indeed, the rice industry is strongly influenced by production and business conditions, if the conditions are good, it will contribute to improving the product's quality, thereby enhancing the industry's competitiveness..

The relevant and supporting industry factor (CO), with  $\beta = 0.093$ , indicates the positive relationship of the supporting industry and related to the competitiveness of the rice industry.

Domestic and international demand conditions (MS), is a factor that has a relatively large influence with a  $\beta$  coefficient = 0.49, this is a decisive factor to the ability to consume Vietnamese rice products if supplied without the demand, it is impossible to consume the product. To promote product competitiveness, it is necessary to have a demand for products.

The factor of business strategy, structure, and competition (IEI), the roles of government (SS) have a positive impact on the Rice Industry Competitiveness (SC) with a significant level of 99%. With influence coefficients respectively 0.359 and 0,287

Besides, the control variables include Age (age), Gender (Gender), number of employees (Labor) are affecting the competitiveness of the rice industry with a significance level of 95%, which age and labor have a positive impact while gender has a negative effect. With the influence coefficient of the age group 0.006, this is also pretty appropriate because, besides the application of science and technology, the rice sector is influenced by the experiences of actors involved in the rice supply. The more involved in the production, the more experience the agents will have to produce quality and better products, thereby contributing to the capacity building of the rice industry.

Thus, based on the model, it can be concluded that improving market signals, production, and business conditions will develop the rice industry's competitiveness the most. Next, it is also necessary to focus on strengthening the international economic integration of actors in the rice industry as well as support from the state.

#### 5. Recommendations

To improve the competitiveness of Vietnam's rice industry, from the research results, the author offers some recommendations as follows:

First, it is necessary to expand the market for the product and need the knowledge to meet market requirements.

Second, the government needs to open more training courses on tending to rice for the farmers to help them access more modern techniques.

Third, households also need to have access to market requirements for rice products.

Fourth, families also need to self-improve their professional knowledge in technical terms to meet production

requirements, whereby creating quality products to meet the market's requirements.

Fifth, enterprises and merchants need more timely and useful support to farmers about market requirements, science and technology, and capital to support production.

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