

MÔ HÌNH ĐỀ XUẤT VỀ NĂNG LỰC CẠNH TRANH NGÀNH SẢN XUẤT ĐỒ GỖ VIỆT NAM

Trần Việt Đức¹, Vũ Xuân Thôn²,
Nguyễn Phan Thiết³,

Tóm tắt

Khả năng cạnh tranh của các doanh nghiệp chế biến gỗ là một trong những giải pháp quan trọng nhưng ở Việt Nam vẫn chưa có nhiều nghiên cứu sâu hơn về vấn đề này, nên nghiên cứu "Đề xuất mô hình đánh giá năng lực cạnh tranh của các doanh nghiệp sản xuất đồ gỗ Việt Nam" góp phần nâng cao sức cạnh tranh của các doanh nghiệp đồ gỗ Việt Nam. Trên cơ sở đó, liên hệ với ngành sản xuất gỗ thì mô hình đề xuất có thể áp dụng giải quyết vấn đề năng lực cạnh tranh trong ngành này. Bài viết xác định các nhân tố thực tế tác động tới năng lực cạnh tranh và khả năng cạnh tranh của các doanh nghiệp sản xuất đồ gỗ tại Việt Nam. Đưa ra một số giải pháp xây dựng năng lực mà từ đó giúp các doanh nghiệp trong ngành có thể áp dụng để giải quyết vấn đề về cạnh tranh.

Từ khóa: *Sự cạnh tranh, ngành sản xuất đồ gỗ Việt Nam, Doanh nghiệp chế biến đồ gỗ mô hình năng lực cạnh tranh, các nhân tố ảnh hưởng.*

PROPOSAL MODEL OF COMPETITIVENESS FOR VIETNAM TIMBER INDUSTRY SECTOR

Abstract

The competitiveness of wood processing enterprises is one of the important solutions, but in Vietnam there are not many research in depth on this issue. Therefore, the study "Proposal Model of Competitiveness for Timber Industry Sector" (VTIS) is to identify the factors that really affect the competitiveness and competitiveness of Vietnamese timber enterprises. Based on this, related to timber business sector the proposal model can be applied to solve the problems of competitiveness of their enterprises. This paper is to identify the factors that really affect the competitiveness and competitiveness of Vietnamese timber industry enterprises. A number of capacity building solutions, on which related to the businesses can apply to solve the problems of competitiveness of their businesses.

Keywords: *Competitiveness, Vietnam Timber Industry Sector, Timber Industry Enterprises, Competitiveness Model, determinants.*

1. Introduction

Competitiveness of the enterprises are the ability to combine resources of these firms to create competitive advantage, in other words, competitiveness of a company is the ability to maintain, deploy and coordinate resources and capabilities. In that way helps the companies achieve their goals "(Sanchez & Heene, 1996, 2004). Therefore, competitiveness is always a top concern of the company, managers, and researchers. There have been many studies on the competitiveness of enterprises have been made all over the world.

Over the years, Vietnam timber industry sector has made great progress in terms of quality, quantity, and export turnover. Export turnover growth of wood products reached more than 10%/year. In 2016, the export turnover reached more than 6.9 billion US dollars and Vietnam timber industry has risen to No. 1 in Southeast Asia. However, the competitiveness of

Vietnamese timber industry sector has not been studied; it is difficult to apply research into the competitiveness of other industries in the timber processing firms because they have different characteristics. Therefore, this study will answer those questions: What are factors really affected on competitiveness? What is current status of competitiveness of wood processing industry in Vietnam? Is there any solution to rise? This study will answer those questions. This paper is come up with propose a model of competitiveness for timber industry sector (enterprises) in Vietnam.

2. Methodology

The study uses data collected through interviews with knowledgeable, skilled and knowledgeable people on the competitiveness, as well as on the woodworking sector in the training institutions, research and management.

- **Sample:** Provinces will be surveyed: Furniture enterprises in Binhđinh, Dongnai and

Binhduong provinces account for more than 90% of furniture enterprises in the whole country. Therefore, surveyed enterprises are selected in these three provinces (Development strategy of Forestry 2015-2030).

The data analysis method used for this study is an analytical method based on the model of exploratory factor analysis. In order to achieve reliable estimation of this method, the sample

must be of sufficient size. Based on the experiences of Hair & Associates (2010) (*The Hair, JF, Black, WC, Babin, BJ, Anderson, RE, (2010)*). The minimum sample size for the model of exploratory factor analysis is at least 5 observations (preferably 10 observations or more) for an estimation parameter. Number of surveyed Furniture enterprises.

Table 1: Number of surveyed Furniture enterprises in the 3 provinces

N0	Province	Total furniture enterprises	Number of selected FEs
1	Dong Nai	365	15
2	Binh Duong	810	25
3	Binh Dinh	64	10
	Total	1239	50

Thus, the theoretical model has 24 parameters to estimate, so the minimum sample size required for formal study is 120 (24 x 5) observations. To gain this sample size, 150 questionnaires/interviews were conducted and collected 150 questionnaires. For example, selected FEs is an establishing a proposal theoretical model of competitiveness of Vietnam timber industry enterprises (VTIs) includes: in Vietnam National University of Forestry (VNUF) 5 people; in Vietnam Administration of Forestry (VIFOREST) 5 people; in Vietnam Associate of Forestry Science and Technique (VAFST) 5 people; and total questionnaires/interviews distributed 15.

Sampling technique

- Survey sample was selected by random method, stratified in combination with the following criteria:

- + For wood furniture production enterprises:
 - * Medium / small scale
 - * Producing interior and exterior furniture
 - * Mainly exported products

+ For the interviewee or questionnaire, there are 3 types of person selected as follow: Chief of executive officer (CEO), head of department (HoD) and foreman (FM).

- Questionnaires will be formulated in 7 indicators of competitiveness (base on Porter’s formulation they will be modified depending on actual conditions of Vietnam)

- Questionnaire: The surveys questionnaire will be sent to wooden furniture companies in the provinces Vietnam. Before sending the questionnaire to the potential firms, the author asked some advices from supervisor and some fellows to make sure that the questions were

Source. Calculated by author from survey data. clear and easy to understand. The questionnaires were conducted in forms of online survey (emails) and telephone survey.

- Answer and question survey: The author will directly gives questions for questioned peoples and get their answers

Field survey: The author will go to selected companies to gather documents and data.

Data processing methods

- Descriptive statistics method
- Analytical methodology for exploring the EFA
- SWOT analysis method
- Professional solution

3. Results and discussion

3.1. Identify the groups of factors that really affect the competitiveness of VTIS

The company’s competitiveness is reflected in the assessment of overall competitiveness and the composition groups/the influence to its overall competitiveness based on the use of the five-level Likert scale. Competitiveness of firms is analyzed based on Exploratory Factor Analysis (EFA).

3.2. Quality testing of the scale by Cronbach Alpha Coefficient

The scale and reliability of the observed variables were estimated using the Cronbach’s Alpha coefficient and the Exploratory factor Analysis. The requirement for a scale to be accepted is to eliminate variables with a corrected item – total correlation of less than 0.3 and a Cronbach’s Alpha coefficient of less than 0.6. Furthermore, in EFA, factors with factor loading of less than 0.5 are excluded from the scale because of a poor correlation with the underlying factors (measurement concept). The final step is to test the model by using a multivariate regression with a statistically significant 5%.

Table 2: Summary of results of quality analysis of the scale By Cronbach Alpha coefficient

No	Group of variables	Number of variables	Eliminated variable	Number of remaining variables	Cronbach Alpha
1	Ability of Organization and Enterprise management (E)	4	0	4	0,789
2	Employment qualification (L)	4	L22	3	0,612
3	Machine and Technology (M)	3	0	3	0,680
4	Product quality and package (Q)	2	Q41; Q42	0	0,502
5	R & D capacity (R)	3	0	3	0,763
6	Finance position (F)	3	0	3	0,832
7	Infrastructure (I)	5	I71	4	0,834

Source: Calculated by author from survey data.

The quality testing of scale in Table 2 show that:
 - Variables L22, Q41, Q42, and I71 have correlation coefficients comparing to corrected item – Total correlation of less than 0.3, so these variables are eliminated from the model.

- Cronbach Alpha coefficients of the population are greater than 0.6 except that the "Quality of Product Q" factor group has

Cronbach alpha coefficient = 0.502 < 0.6, so this group is eliminated from the model.

Thus, the scale system is built with six-level scale is good quality assurance with 20 characteristic variables.

3.3. The Results of Exploratory Factor Analysis – EFA

- Testing the suitability of the EFA

Table 3: Testing KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0,906
Barlett's Test of Sphericity	Approx. Chi-Square	1177,816
	df	120
	Sig.	0,000

Source. Calculated by author from survey data.

- Correlation verifying of observed variables in the representative metric: Table 3 shows that the Bartlett test has significance degree Sig.<0.05, so that the observed variables are linearly correlated with the representative factor.

- Testing the explanation level of the observed variables for the factor: The column Cumulative of Table 4. shows that the deviation value is 67.98%, which means that 67.98% of the change of factors is explained by the observed variables.

Table 4: The Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6,753	42,208	42,208	6,753	42,208	42,208	4,305	26,908	26,908
2	2,024	12,650	54,858	2,024	12,650	54,858	2,784	17,401	44,308
3	1,078	6,738	61,596	1,078	6,738	61,596	2,075	12,969	57,277
4	1,021	6,382	67,978	1,021	6,382	67,978	1,712	10,700	67,978
5	,701	4,384	72,362						
6	,672	4,197	76,559						
7	,566	3,537	80,096						
8	,541	3,381	83,477						
9	,435	2,719	86,196						
10	,426	2,663	88,859						
11	,362	2,261	91,121						
12	,318	1,989	93,109						
13	,312	1,948	95,057						
14	,291	1,820	96,877						
15	,255	1,596	98,473						
16	,244	1,527	100,000						

Extraction Method: Principal Component Analysis.

Source: Calculated by author from survey data.

- The result of the model

Through the quality testing of the scale and of the EFA modeling, the validation of that there are 4 scales representing the factors affecting to

the overall competitiveness and one scale representing the overall competitiveness (TC) (see Table 5).

Table 5: Adjustment model after testing Crobach Alpha and Exploratory factor analysis

No	Scales	Characteristic variables	Explanation of the scale
1	F (F1)	F61, F62, F63, I73, I75, M31, M32	Finance Position (F6)
2	E (F2)	E11, E13, E14, L23	Ability of Organization and Enterprise management (E1)
3	I (F3)	I72, I74, L21	Infrastructure (I7)
4	R (F4)	R52, R53	R & D capacity (R5)
5	NLCTC	TC	Overall Competitiveness (TC)

Source: Calculated by author from survey data

- Multivariate regression analysis

To identify the factors that affect to competitiveness, the overall correlation pattern is:

$$TC = f(F1, F2, F3, F4)$$

Where:

TC: Dependent variable;

F1, F2, F3, F4: Independent variables.

The consideration of the factors from F1 to F4, which directly really affect to the competitiveness of the enterprise will be achieved by the linear regression equation:

$$TC = \beta_0 + \beta_1 F_1 + \beta_2 F_2 + \beta_3 F_3 + \beta_4 F_4$$

Where, the variables included in the regression analysis are determined by calculating the factor score.

Table 6: Model Summary

Independent variables	Regression coefficient is not standardized (B)	Value t	Level of statistical significance (Sig.)	VIF	Standardized regression coefficient (Beta)	Absolute value of Beta	Contribution degree of variables (%)	Important degree of variables
(Constant)	2,787	63,350	,000	1,000				
F1	,288	6,526***	,000	1,000	,400	,400	33,90	2
F2	,360	8,163***	,000	1,000	,501	,501	42,46	1
F3	,136	3,082**	,002	1,000	,189	,189	16,02	3
F4	,065	1,466 ^{NS}	,145	1,000	,090	,090	7,63	-
Total						1,18	100,0	
		Independent variables : TC – Overall competitiveness of enterprise						
	Sample size	150						
	F	30,222***						
	Coefficient R ²	0,455						
	Coefficien R ² have been adjusted	0,440						
	Durbin Watson	1,902						

Notes: *** Meaning level <0.01; ** Significance level of <0.05; * Meaning level <0.10 (double-sided test); NS: Not significant - Not statistically significant

- Correction coefficient R² of 0.440: Thus, 40% of the change in the enterprise competitiveness is explained by independent variables of the model.

- VIF are less than 10, so the regression model does not have multi-collinearity. The Durbin Watson coefficient (1 < d = 1,902 < 3), thus, the regression model has no autocorrelation.

- With significance level Sig. <0.05 of the F test, it can be concluded that the given model is

Source: Calculated by author from survey data. consistent with the actual data. In other words, the independent variables have a linear correlation with the dependent variable and with confidence level of 95%.

- Columns “Significant level” showed that all variables had statistical significance levels less than 0.05 except that F4 was not statistically significant. Thus, all factors from F1 to F3 have

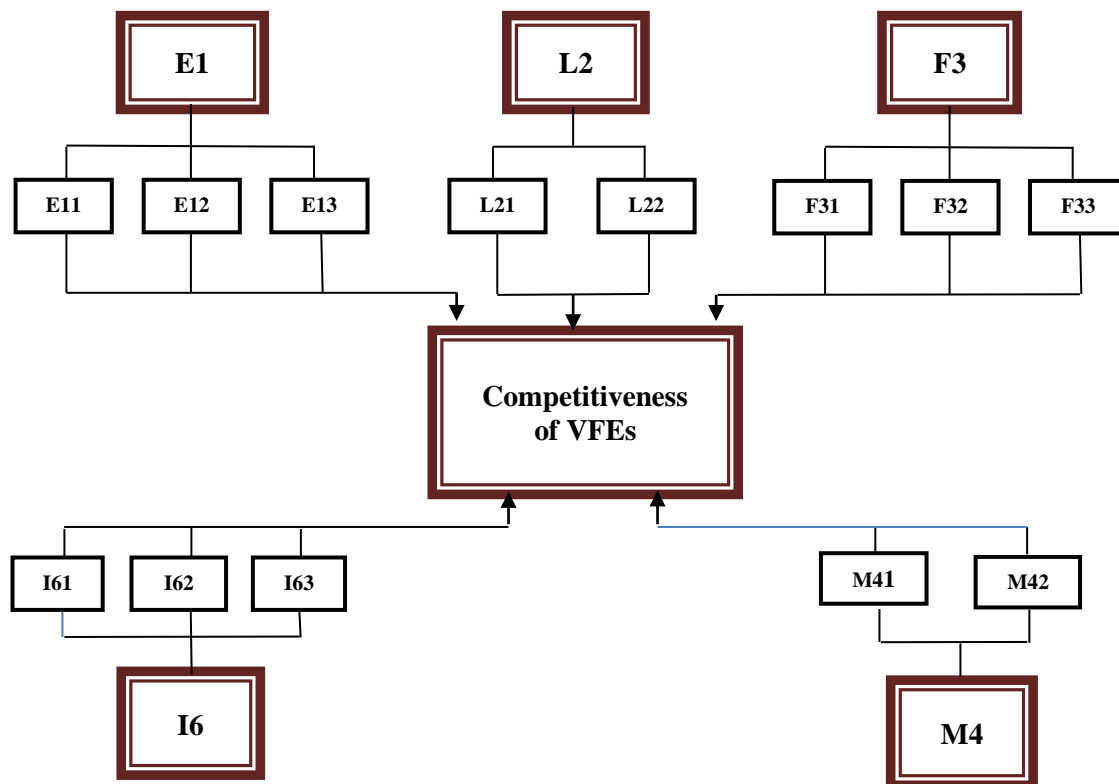
a significant impact on the competitiveness of enterprises with confidence level of 95%.

Model of the competitiveness of VTIS

The tests confirm that the groups of factor that affect to the competitiveness of the furniture enterprises in Vietnam. They consist of 6 groups with 16 factors:

- * The group E1: Organization and Enterprise management
 - E11: Performance Effectiveness of the management system
 - E12: Structure capacity of personnel
 - E13: Leadership capacity of enterprise owner
- * The group L2: Labor qualification
 - L21: Rate of trained employees
 - L22: Skills of employee
- * The group F3: Finance position
 - F31: Size of capital of enterprise
 - F32: Ability to find a source of capital for production and business activities

- F33: Ability to give payments fully and, timely
- * The group M4: Machine and Technology
 - M41: Type, amount of machine
 - M42: Quality of machine and technology
- * The group R5: R & D Capacity
 - R51: Level of investment in research and development (R & D) of technology
 - R52: Budget for technological innovation
- * The group I6: Infrastructure
 - I61: Level of meeting requirement of Total area of production workshops
 - I62: Level of meeting requirement of Auxiliary systems (roads, electricity ware, supply and drainage of water) in the layout
 - I63: Level of meeting of requirement of Total area of the enterprise's land for present activities and expansion in the future
 - I64: Level of meeting requirement of The system of administration houses and canteens, dwellings for workers



*Model 1. Model of the competitiveness of VTIS
The Actual proposal model of competitiveness for VTIS*

The present competitiveness of VFEs in term of the real groups of factors by Descriptive Statistics
Table 7: Competitiveness of VFEs in term of the real groups of factors by Descriptive Statistics

No	Factor	Average value of The criteria	Variance	Standard Deviation	% (compare to max. score - 5 points)	Degree of competitiveness
1	Ability of Organization and management (E1)					
1.1	Performance Effectiveness of the management system (E11)	2,97	0,51	0,71	59,40	Medium
1.2	Structure capacity of personnel (E13)	3,31	0,42	0,65	66,20	High
1.3	Leadership capacity of enterprise owner (E14)	3,55	0,45	0,67	71,00	High
2	Employment qualification (L2)					
2.1	Rate of trained employees (L21)	2,71	0,34	0,58	54,20	Medium
2.2	Skills of employee (L23)	3,00	0,44	0,67	60,00	Medium
3	Machine and technology (M3)					
3.1	Type, amount of machine (M31)	3,62	0,40	0,63	72,40	High
3.2	Quality of machine and technology (M32)	2,53	0,43	0,65	50,60	Medium
4	Finance Position (F4)					
4.1	Size of capital of enterprise (F41)	2,86	0,81	0,90	57,20	Medium
4.2	Ability to find a source of capital for production and business activities (F42)	3,34	0,60	0,78	66,80	High
4.3	Ability to give payments fully and, timely (F43)	3,76	0,51	0,71	75,20	High
5	R&D Capacity (R5)					
5.1	Level of investment in research and development (R & D) of technology (R51)	1,29	0,45	0,60	25,87	Weak
5.2	Budget for technological innovation (R52)	1,30	0,42	0,54	26,07	Weak
6	Infrastructure (I6)					
6.1	Level of meeting of requirement of Total area of the enterprise's land for present activities and expansion in the future (I61)	2,97	0,74	0,86	59,40	Medium
6.2	Level of meeting requirement of Total area of production workshops (I62)	3,00	0,68	0,83	60,00	Medium
6.3	Level of meeting requirement of The system of administration houses and canteens, dwellings for workers (I63)	1,59	0,51	0,72	31,80	Weak
6.4	Level of meeting requirement of Auxiliary systems (roads, electricity ware, supply and drainage of water) in the layout (I64)	3,22	0,52	0,72	64,40	High

Source: Calculated by author from survey data.

Table 8: The Degree of present competitiveness of VFEs in the real affected criteria

No	Factor	General solution
1	Group 1: Ability of Organization and management (E1)	
1.1	Performance Effectiveness of the management system	Medium
1.2	Structure capacity of personnel	High
1.3	Leadership capacity of enterprise owner	High
1.4	Skills of employee	Medium
2	Group 2: Finance Position (F6)	
2.1	Size of capital of enterprise	Medium
2.2	Ability to find a source of capital for production and business activities	High
2.3	Ability to give payments fully and, timely	High
2.4	Level of meeting requirement of Total area of production workshops	Medium
2.5	Level of meeting requirement of Auxiliary systems (roads, electricity ware, supply and drainage of water) in the layout	High
2.6	Type, amount of machine	High
2.7	Quality of machine and technology	Medium
3	Group 3: Infrastructure	
3.1	Level of meeting of requirement of Total area of the enterprise's land for present activities and expansion in the future	Medium
3.2	Level of meeting requirement of The system of administration houses and canteens, dwellings for workers	Weak
3.3	Rate of trained employees	Medium

Source: Calculated by author from survey data.

Analyzing expert opinion using SWOT method

Table 9: Analyzing expert opinion using SWOT method

	Opportunities (external, positive)	Threats (external, negative)
Strengths (internal, positive)	Strength-Opportunity strategies Which of the company's strengths can be used to maximize the opportunities you identified?	Strength-Threats strategies How can you use the company's strengths to minimize the threats you identified?
Weaknesses (internal, negative)	Weakness-Opportunity strategies What action(s) can you take to minimize the company's weaknesses using the opportunities you identified?	Weakness-Threats strategies How can you minimize the company's weaknesses to avoid the threats you identified?

And based on the results of the analysis of the present situation and the factors affecting to the competitiveness and competitiveness of the surveyed enterprises, some possible solutions to improve the competition of VTIS are as follows:

- *Improve the Ability of organization and management of enterprises and skills of employees.*

- *Improve the finance position of the enterprise*

- *Improve infrastructure and machinery for enterprise*

4. Conclusions

- The study has the following results: Contributed to the systematization of the competitive theory of enterprise, as well as

systematize and analyze the results of the researches related to the the thesis topic.

Established a theoretical model of competitiveness of VTIS

- Identified factors that affect to the competitiveness of VTIS as well as the interactions between them.

- Indicated the current competitiveness of VTIS.

- Established a realistic model of competitiveness of VTIS.

- Proposed a scientific and practical plan to improve the competitiveness of VTIS.

- Also need to focus to some points of the results of the study:

- There are differences between proposal theoretical and practical models.

- The actual model of competitiveness of VTIS is proved to be compatible and practical.

- Solutions to improve the competitiveness of VTIS are practical and feasible.

- Limitations of the study

- The model only examines the impact of the group of internal factors on the competitiveness of VTIS without indicating the impact of external factors (eg, general policy as

well as policies for furniture industry), market information, input materials supply, ..etc).

- When studying the impact of the group of internal factors on the competitiveness of VTIS, some of the internal factors such as marketing capacity, cost, product distribution, sales activity, after-sales services, so on were not mentioned.

- Ability to apply the results of this study in practical: It is possible to apply the model of the study by scoring the influencing factors to determine the competitiveness of the enterprise.

- On the basis of solutions proposed by the study and the reality at the enterprise to develop a plan to improve the competitiveness of enterprise.

- Further research recommendations for the competitiveness of VTIS:

- Considering the impact of external factors: market information, input materials supply, etc.) to the competitiveness of VTIS.

- Study the impact of other internal factors on the competitiveness of VTIS, such as marketing capacity, cost, product distribution, sales activity, after-sales services. Also, to be applied the researched model and proposed solutions to practices in order to improve it.

REFERENCES

- [1]. A. He P. (2008). *Competitiveness Capacity Enhancement of Exported Timber Industry*. Commercial Paper, (23).
- [2]. Binh H.T. (1997). *Solutions improving timber materials in Vietnam wood industry*. University of Economics Ho Chi Minh City
- [3]. Doan Viet Dung. (2015). *Theory of competitive structure with the enhancement of competitiveness of Vietnam commercial banks today*. Hanoi National Economic University
- [4]. Le Thi Hang. (2013). *Improving Competitiveness in Providing Mobile Communication Services of Vietnam Telecommunication Companies*. *PhD thesis*. National Economics University, Hanoi.
- [5]. Pham Thu Huong. (2017). *Competitiveness of small and medium scale enterprises (SMEs)*. *PhD Thesis: Study on Area of Hanoi*.
- [6]. Hong P.T (2004). *Competitiveness Strategy for SMEs in Vietnam now*. Hanoi: National Politics Published House.
- [7]. Nguyen Manh Hung. (2013). *Enhancing the Competitiveness of Vietnam's Telecommunications Sector*. *PhD thesis*. National Economics University, Hanoi.
- [8]. Lau, Ronald S. (1 January 2002). *Competitive factors and their relative importance in the US electronics and computer industries*. *International Journal of Operations & Production Management* 22 (1): 125–135.
- [9]. Nguyen Thanh Long. (2016). *Research on factors affecting competitiveness of Ben Tre tourism enterprises*. *PhD thesis*. Ho Chi Minh City University of Economics.
- [10]. Passemard and Calantone (2000). *Competitive Advantage: Creating and Sustaining Superior Performance by Michael E. Porter* 1980, p. 18.
- [11]. Salinger, L. 1997. *Comparative Advantage Analysis A Guide to Developing Agriculture Markets and Agro Enterprises*. Pp 1-120, World bank.

- [12]. Porter, M.E. (1985). *Competitive Advantage*, Free Press, New York.
- [13]. Powell, Thomas C. (1 September 2001). Competitive advantage: logical and philosophical considerations. *Strategic Management Journal*, 22 (9): 875–888.
- [14]. Report on Competitiveness of Vietnam. (2010). *Central Institute for Economy Management - CIEM*.
- [15]. R. Francois Husson, Sebastien Le, Jérôme Pagès. *Exploratory Multivariate Analysis by Example Using*. CRC Press 2011
- [16]. Thanh D.D. (2010). *Competitiveness Capacity in the Global Intergrative Era*. Youth Union Publisher, HCM City.
- [17]. The Global Competitiveness Report 2015 - 2016.
- [18]. The Annual Global Competitiveness Report, 2015.
- [19]. Pham Thi Hong Yen, Hoang Xuan Hoa. (2016). The present status and proposing solution. Central Institute For Economy Management-CIEM. *WB-Annual Business Report 2016*.

Thông tin tác giả:

1. Trần Việt Đức

- Đơn vị công tác: Trường đại học Sư phạm Kỹ thuật Nam Định
- Địa chỉ email: tranvietduc6903@gmail.com

2. Vũ Xuân Thôn

- Đơn vị công tác: Ban quản lý các dự án lâm nghiệp – Bộ NN&PTNT

3. Nguyễn Phan Thiết

- Đơn vị công tác: Trường đại học Lâm nghiệp Việt Nam

Ngày nhận bài: 22/05/2018

Ngày nhận bản sửa: 25/06/2018

Ngày duyệt đăng: 29/06/2018