

**INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH
TECHNOLOGY****THE IMPACT OF COMPETITIVE ADVANTAGE ON COMPETITIVE POSITION
OF AIR CARGO TRANSPORT IN VIETNAM****Mr. Nguyen Hai Quang**

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ABSTRACT

This study determined the effects of these competitive advantage factors to the competitive position of air cargo transport in Vietnam through empirical research. Based on the survey and analysis of data, research results show that the resource factors affecting the competitiveness of the product more than the elements of the possibilities. As for the competitive position, the most affected was the elements of the competitiveness of the products, followed by the elements of the possibilities and ultimately was the elements of resources. These results serve as a basis for the formulation of policies to increase the advantage and competitive position in air cargo transport for airlines in Vietnam.

KEYWORDS: Competitive position, competitiveness, air cargo transport.**INTRODUCTION**

Correctly identify the advantages to compete and create competitive position toward the opponents is the important task of managing air cargo transport, especially in the market of international air transportation of Vietnam (the market share of Vietnam's airlines has decreased from 34.32% in 2001 to 14.14% in 2015). To assess the impact of competitive advantage factors to the competitive position of air cargo transport in Vietnam, this study will base system theory and related studies, modeling studies and hypotheses, survey to collect and analysis data. The results of data analysis is the basis to propose policy for airlines on air cargo market in Vietnam.

MATERIALS AND METHODS**Theoretical basis and design research model*****Theoretical basis***

On a business perspective, the competitive advantage is the leverage that a business has over its competitors (M. Porter, 1985). It is what makes the business so prominent or different than the competitors. In other words, it is what the competitors don't have or the business perform better than its competitors.

Competitive advantages of the business are derived from their resources and capabilities. Company's resources are including physical resources, human resources, financial resources and the intangible values such as brand, systems... The capabilities are mention the company uses resources efficiently. It includes the ability of management, market research, product development, marketing, sales... Resources and capabilities together will creates a distinctive competencies of the company. These competencies create products with cost or differentiation advantages. This is the competitive advantage at product level.

One of the generated values from the competitive advantages at product level is company's competitive position. Competitive position is a position that the company has achieved in the market, or trying to achieve during competition. The company's competitive position compared to its competitors is showed by market share and distinctive competencies of company (Nguyen Huu Lam et al., 2007).

In the previous study, the author has done qualitative research to explore the factors affecting the competitive position of airline's cargo transport. According to many studies in different contexts on the factors affecting the competitiveness of the companies are inherited to build frame model. Specific factors show the competitiveness and competitive position of air cargo transport is studied from some research related to transport and air transport such as the research by M. G. De Lima et al. (2007) of freight in Brazil; by Krystyna Kowalska (2014) in transport business, freight forwarding and logistics services; or air cargo express delivery services in Korea of

Yonghwa and Park et al. (2009); Dao Manh Nhung et al. (2001) on the solution to improve the competitiveness of the civil aviation industry in Vietnam in the context of international integration. Based on these studies, the model factors affecting the competitive position of air cargo transport including 3 group element: Resources, capabilities, competitive advantages product level (Figure 1).

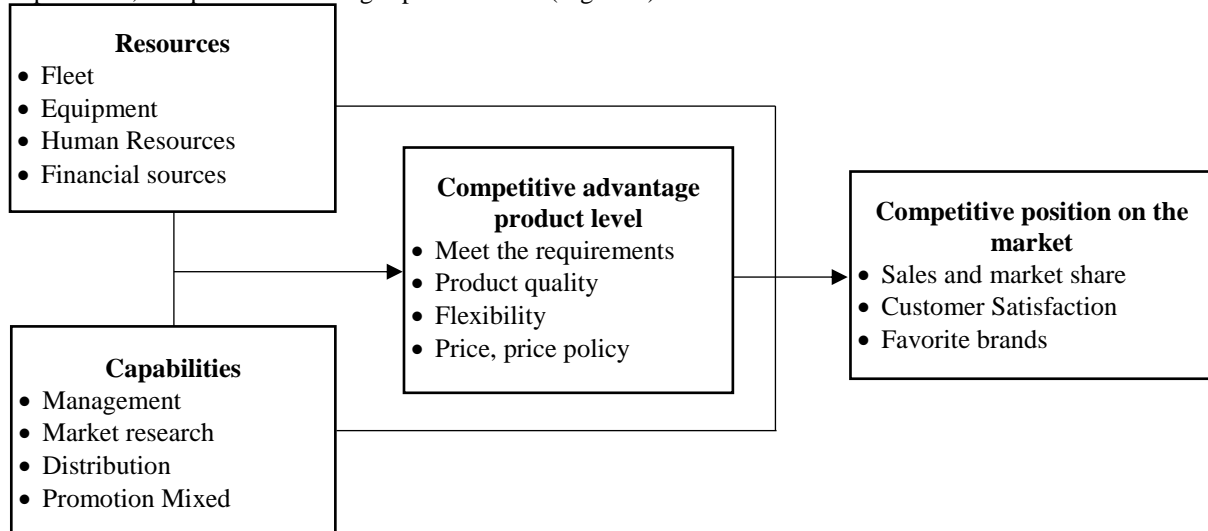


Figure 1. Model of factors affecting the competitive position in air cargo transport

Source: Nguyen Hai Quang (2017)

Hypothesis and models

Hypothesis 1: Resources and capabilities for air cargo transport has an impact on the competitive advantage in product level. Model for testing of this hypothesis is the linear regression model with variables affect are resources and capabilities for air cargo transport (Formula 1)

$$\text{Model 1: } PR = b + a_1RE + a_2CA \tag{1}$$

Hypothesis 2: Resources, capabilities and competitive advantage in product level has an impact on the competitive position of air cargo transport on the market. Model for testing of this hypothesis is the linear regression model with variables affect are resources, capabilities and competitive advantage in product level of air cargo transport (Formula 2)

$$\text{Model 2: } CP = b + a_1RE + a_2CA + a_3PR \tag{2}$$

Where:

- CP: Competitive position of air cargo transport on the market
- PR: Competitive advantage in product level of air cargo transport
- RE: Resources for air cargo transport activities
- CA: Capabilities for air cargo transport activities
- b, a₁, a₂, a₃: The parameters to be estimated in the models.

Research methods

Variable and scale

From model factors affecting the competitive position of air cargo transport, after further discussion with experts and users of air freight services, four groups of factors that are developed into 23 variables observed, including: 5 variables of factor "resources for air cargo transport activities"; 6 variables of factor "capabilities for air cargo transport activities"; 8 variables of factor "competitiveness of air cargo transport product" and 4 variables of factor "competitive position of air cargo transport on the market" (Table 1).

Table 1. Expression and coding for variable of factors

Observed variables		Encode
<i>Resources for air cargo transport activities</i>		
1	Potential fleet for air cargo transport services	RE ₁
2	Suitable aircraft for air cargo transport services	RE ₂
3	Suitable equipment for air cargo transport services	RE ₃
4	Strong human resources, professional and skilled	RE ₄
5	Potential finance for air cargo transport services	RE ₅

<i>Capabilities for air cargo transport activities</i>		
6	Effectiveness of the organizational structure	CA ₁
7	Effectiveness of management systems	CA ₂
8	Market research and understand customer demand	CA ₃
9	Sale systems and distribution channels	CA ₄
10	Price policy, sale promotions	CA ₅
11	Communication and promotional activities	CA ₆
<i>Competitiveness of air cargo transport product</i>		
12	Air cargo transport services for customer's diversified demand	PR ₁
13	Flight schedule stabilization and convenient for customers	PR ₂
14	Load capacity available and special services	PR ₃
15	Air cargo transport procedures simple and flexible	PR ₄
16	Fast air cargo transport services and punctuality	PR ₅
17	Goods are preserved and not lost	PR ₆
18	Suitable price with quality of service	PR ₇
19	Good customer service	PR ₈
<i>Competitive position of air cargo transport on the market</i>		
20	Satisfaction of air cargo transport services	CP ₁
21	The favorite of air cargo transport services and brand	CP ₂
22	Introducing about air cargo transport services	CP ₃
23	Market shares of air cargo transport services	CP ₄

Source: From the research

Variables from 1 to 22 are measured by 5 level scale: 1 is strongly disagree; 2 is not agreed; 3 is no opinion; 4 is agree and 5 is strongly agree. variable 23 is also measured by 5 level scale: 1 is very low ($\leq 20\%$), 2 is low (21-40%), 3 is average (41-60%), 4 is high (61-80%) and 5 is very high (81-100%).

Survey and data collection

To ensure statistical significance, sample size must be greater than or equal to 5 times the number of questions or observed variables (Hoang Trong Nguyen Mong Ngoc Chu, 2005). Variables observed in this study was 23 for 4 groups of factors. Therefore, the minimum sample size: $n = 23 \times 5 = 115$ questionnaires. Number of samples collected in this study was 150 questionnaires then have been checked and cleaned by SPSS. They include 96 assessments of service users of air cargo transport (shippers, forwarders and air cargo services) and 54 assessments of experts for three domestic airlines and foreign airlines in Vietnam air transport market (Table 2).

Table 2. Summary of the survey

Unit: People

Airline	Service users		Experts		Total	
	Number	Proportion	Number	Proportion	Number	Proportion
Vietnam Airlines	27	28.1%	27	50.0%	54	36.0%
Jestar-Pacific Airlines	6	6.2%	0	0.0%	6	4.0%
VietJet Air	12	12.5%	9	16.7%	21	14.0%
Foreign airlines	51	53.1%	18	33.3%	69	46.0%
Total	96	100.0%	54	100.0%	150	100.0%

Source: Results of descriptive statistics

Reliability analysis of scale

Scale reliability was assessed by Cronbach's Alpha coefficients and Corrected item - total correlation to eliminate the variables "junk". Variable has Corrected item - total correlation less than 0.3 will be disqualified and the scale will be chosen when Cronbach's alpha coefficients greater than 0.7.

Result of Cronbach's alpha analysis show that if RE₃ or CP₄ variable is deleted, Cronbach's alpha coefficients are higher. However all Cronbach's Alpha coefficients of scales are > 0.7 and all Corrected item - total correlation of observed variables are greater than 0.3 so all variables observation are acceptable to analyze in the next steps (Table 3).

Table 3. Reliability analysis of scales

Cronbach's Alpha of scale	Variable	Corrected item-total correlation	Cronbach's alpha if item deleted	Cronbach's Alpha of scale	Variable	Corrected item-total correlation	Cronbach's alpha if item deleted
<i>Resources for air cargo transport activities</i>				<i>Competitiveness of air cargo transport product</i>			
0.899	RE ₁	.758	.877	0.921	PR ₁	.629	.919
	RE ₂	.798	.868		PR ₂	.747	.909
	RE ₃	.556	.915		PR ₃	.847	.901
	RE ₄	.812	.863		PR ₄	.783	.907
	RE ₅	.846	.855		PR ₅	.766	.908
<i>Capabilities for air cargo transport activities</i>					PR ₆	.731	.911
0.924	CA ₁	.786	.910		PR ₇	.682	.914
	CA ₂	.838	.902		PR ₈	.712	.912
	CA ₃	.804	.907	<i>Competitive position of air cargo transport</i>			
	CA ₄	.791	.909	0.827	CP ₁	.764	.739
	CA ₅	.778	.910		CP ₂	.828	.705
	CA ₆	.697	.921		CP ₃	.790	.727
			CP ₄		.363	.941	

Source: From reliability analysis of scales

RESULTS AND DISCUSSION

Identify the effected factors by factor analysis

To determine the factors affecting the competitiveness of products and the competitive position of air cargo transport, the variables were tested by Exploratory Factor Analysis (EFA) to calculate the value of the represent variables. EFA results show that 11 variables of RE and CA are extracted into 2 factors; 8 variables of PR extracted into 1 and 4 variables of CP are extracted into 1 factor. All "Total Variance Explained" > 50%, KMO coefficient > 0.5 and Sig. < 0.05 so all EFA result are appropriate and accepted (Table 4).

Table 4. The parameters from EFA

Number of variables input	Number of extracted factors	Total Variance Explained	KMO	Sig.
11 variables of RE and CA	2	73.09%	.856	.000
8 variables of PR	1	64.76%	.791	.000
4 variables of CP	1	71.78%	.783	.000

Source: From Exploratory Factor Analysis

Exploratory Factor Analysis with rotation factors method shows that although the order of the variables have changed, but the variables are grouped together as the original scale and all variable have relationships with total variable > 0.5. Thus the observed variables reflect the factors of the original scales are appropriate (Table 5)

Table 5. Rotated Component Matrix

Variable	CA	RE	PR	CP
CA2	.903			
CA3	.822			
CA1	.804			
CA5	.769			
CA6	.701			
CA4	.691			
RE1		.810		
RE5		.805		
RE2		.803		
RE4		.747		

Variable	CA	RE	PR	CP
RE3		.708		
PR3			.886	
PR4			.842	
PR5			.827	
PR2			.808	
PR6			.800	
PR8			.785	
PR7			.761	
PR1			.718	
CP2				.951
CP3				.929
CP1				.917
CP4				.513

Source: From Exploratory Factor Analysis

Result of model testing

Test results show that there is a correlation between the competitiveness of products with resources and capabilities for air cargo transport activities, as well as the competitive position between resources, capabilities and competencies competitive product of air cargo transport. All Sig. value are less than 0.01 so they have correlation with high reliability (Table 6).

Table 6. Matrix correlation

		RE	CA	PR	CP
RE	Pearson Correlation	1			
	Sig. (2-tailed)				
CA	Pearson Correlation	.719**	1		
	Sig. (2-tailed)	.000			
PR	Pearson Correlation	.830**	.742**	1	
	Sig. (2-tailed)	.000	.000		
CP	Pearson Correlation	.772**	.752**	.819**	1
	Sig. (2-tailed)	.000	.000	.000	

**Correlation is significant at the 0.01 level

Source: Results of correlation analysis

Importance of these factors

Results of linear regression analysis in Model 1 (dependent variable is PR) and Model 2 (dependent variable is CP) show that the variables have a positive relationship with the dependent variable and ensure significant statistics (Sig. <0.05). Adjusted R² in the model are greater than 50% and the value of Sig. in ANOVA analysis are less than 0.05 so regression models are appropriate. The value of Variance Inflation Factor (VIF) of all variables in 2 models are in the range from 1 to 10. This means that there is no autocorrelation between independent variables in these models (Table 7, 8 and Figure 2, 3).

Table 7. Parameters are estimated in Model 1

Variable	Unstandardized Coefficients		Beta Standardized Coefficients	t	Sig.	VIF
	B	Std. Error				
Constant	.459	.170	.000	2.705	.008	
RE	.585	.058	.614	10.011	.000	2.071
CA	.305	.062	.300	4.887	.000	2.071
R ² = 0.733			R ² = 0.733			
Sig. in ANOVA = 0.000 (F = 201.419)						

Source: From regression analysis

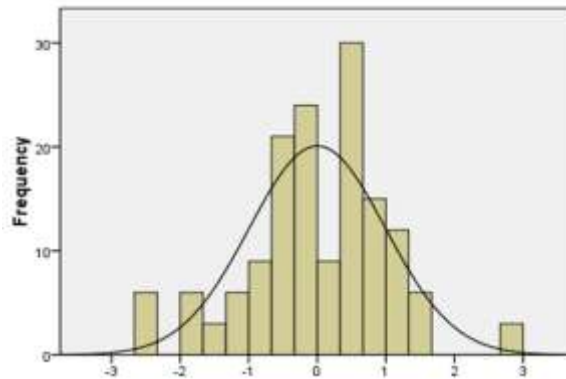


Figure 2. Regression Standardized Residual of Model 1

Source: From regression analysis

Table 8. Parameters are estimated in Model 2

Variable	Unstandardized Coefficients		Beta Standardized Coefficients	t	Sig.	VIF
	B	Std. Error				
Constant	.007	.177	.204	.038	.969	
RE	.196	.077	.274	2.537	.012	3.484
CA	.281	.069	.446	4.090	.000	2.408
PR	.451	.084		5.355	.000	3.740
R ² = 0.729			R ² = 0.723			
Sig. in ANOVA = 0.000 (F = 130.716)						

Source: From regression analysis

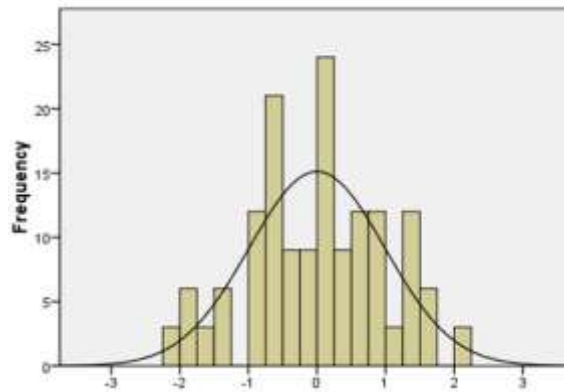


Figure 3. Regression Standardized Residual of Model 2

Source: From regression analysis

From the results of the regression analysis, the model after estimates have the following forms:

Model 1: $PR = 0.614 RE + 0.300 CA$ (3)

Model 2: $CP = 0.204 RE + 0.274 CA + 0.446 PR$ (4)

Model of the factors importance affect the competitive advantage of air cargo transport and competitive position in air cargo transport market from the results of this study are presented in Figure 4.

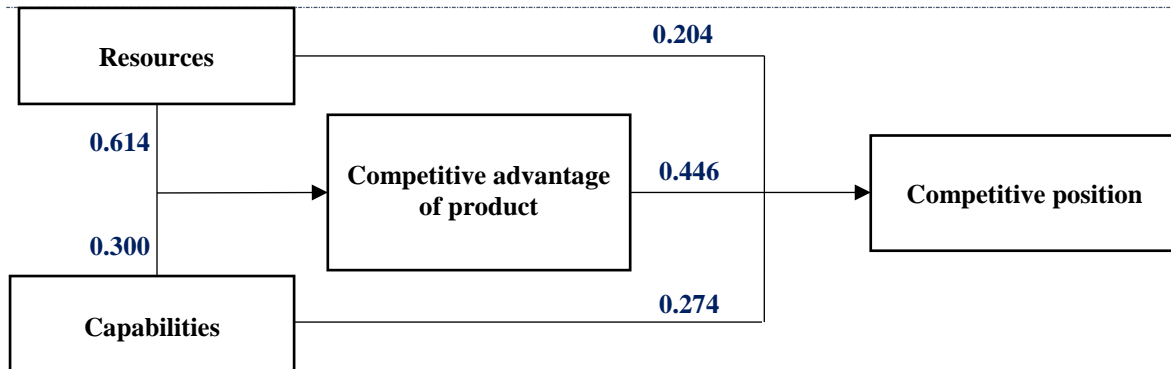


Figure 4. Models from research results

Source: From the result of study

CONCLUSION

The study results show that there is a correlation relationship between the competitiveness of products and resources, capabilities for air cargo transport, as well as the competitive position of air cargo transport and resources, capabilities, competitiveness of products. In case of other factors unchanged, if the resource elements increase 1%, the competitiveness of the air cargo transport will increase 0.644%, while the impact of capability elements is 0.3%. For competitive position of air cargo transport, competitive elements of the product is the greatest impact, next is capability elements and final is resource elements. In case of other factors unchanged, if the these factors increase by 1%, the competitive position of air cargo transport will increase 0.446%; 0.274% and 0.204%. Therefore in order to increase its competitive position in air cargo transport, airlines need to focus on the following solutions:

First, focus to invest appropriate resources for air cargo transport as fleet, facilities, human and finance resources.

Second, improve the ability to use resources efficiently, such as management systems, market research and product development, creating convenience selling system and focus on the activities of advertising, promotion, customer care...

Third, create air transport product with a competitive advantage through product differentiation to meet customer needs (schedules, load available...), product quality (transit time, punctuality, preservation, lost and found ...), simple procedures, suitable price and flexible.

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