

FACTORS AFFECTING THE FAST AND SUSTAINABLE DEVELOPMENT OF THE LOGISTICS SERVICE INDUSTRY IN BAC GIANG PROVINCE

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ABSTRACT: Developing fast and sustainable logistics services is one of Bac Giang province's important goals in 2021-2030, with a vision to 2050. To proactively build a development direction suitable to the context and situation According to the local situation, the research team proposes a model of 3 factors affecting the development of the logistics industry in Bac Giang province. After conducting regression analysis to show the relationship between independent and dependent variables, the research results show that all 3 factors positively impact the sustainable development of the logistics service industry, including Logistics infrastructure; Capability of logistics service providers; Policies on the development of logistics systems.

Keywords -service, logistics, development, sustainability

I. INTRODUCTION

Bac Giang province's planning for the period 2021 – 2030 with a vision to 2050 emphasizes the viewpoint of developing a diversified, modern, and sustainable service industry, significantly enhancing a number of potential and advantageous services, especially making logistics becoming an important economic sector. Bac Giang province determines to develop the logistics service industry in the direction of exploiting its potential, developing sustainable logistics, making logistics occupy an increasing proportion in the economic structure, gradually stand an important position in the field of services, creating a driving force to promote socio-economic development in association with image promotion and brand building.

Sustainability is the continuous process of making optimal use of environmental resources, paying more respect for indigenous communities, and ensuring viable long-term economic activities. In order to develop logistics quickly, it is necessary to focus on effective investment and exploitation; however, to develop a sustainable logistics system, it is necessary to study the combined impact factors so that the optimal plan for the locality can be built up to balance quantity and quality of logistics services.

Therefore, studying the factors affecting the fast and sustainable development of the logistics services industry in Bac Giang province plays an important role in contributing to the theoretical basis as well as the practical model for the locality toward the rapid and sustainable development of the whole service industry in the coming time.

II. THEORETICAL BASIS

Logistics can be defined as the management of the general flow and storage of raw materials, production processes, finished products, and related information...from the point of origin to the place of final consumption. according to customer requirements [1]. Logistics is the process of planning, providing, and managing the efficient movement and storage of goods, services, and related information from the point of origin to the point of consumption for the purpose of meeting customer needs. customers [4].

Research results of Vuong Thi Bich Nga (2021) show that there are 5 groups of factors affecting the development of the Logistics industry in Vietnam, including: (1) Legal policies and administrative procedures; (2) Infrastructure; (3) Human resources and logistics enterprises; (4) Technology and (5) Trade in goods [2].

Research results of Nguyen Thi Tuyet Nga (2019) show that the development of logistics businesses is influenced by four main groups of factors, including: Factors of business environment; Elements of local policy; Factors of internal capacity of enterprises; Capital factor.[3].

III. RESEARCH MODEL AND METHODS

3.1. Proposed research model

The proposed research model includes 3 factors affecting the rapid and sustainable development of the logistics services in Bac Giang province, including: Logistics infrastructure; Capability of logistics service providers; Policies on the development of logistics systems. To examine the impact of each of these factors affecting the rapid and sustainable development of the logistics service in Bac Giang province, the authors tested the correlation among 3 independent variables and the dependent variable which is logistics services development.

3.2. Research method

After removing invalid questionnaires, the sample size was 230 questionnaires.

To measure the level of concepts in the research, the authors use the Likert scale with 5 levels: (1)-Totally disagree; (2)-Disagree; (3)-Neutral; (4)-Agree; (5)-Totally agree. In order to test the factors included in the research model, the research team used SPSS 20 software to carry out this study.

IV. RESEARCH RESULTS

4.1. Test the confidence level of the data

To evaluate the confidence of the factors included in the model, the authors first test the confidence of the scale

Table 1. Results of testing the confidence of independent variables

Observable variables	Corrected item – Total Correlation	Cronbach' s Alpha if item deleted
<i>Logistics infrastructure: Cronbach' s Alpha = 0,794</i>		
Convenient transport infrastructure	0,523	0,770
Plenty and diverse warehouse infrastructure	0,547	0,769
Good information technology infrastructure	0,573	0,754
Wide goods distribution system	0,671	0,732
High-quality provincial system of logistics enterprises	0,589	0,750
<i>Capability of logistics service providers: Cronbach' s Alpha = 0,876</i>		
Human resources	0,727	0,850
Financial potential	0,545	0,873
Infrastructure and equipment	0,652	0,859
Information technology qualification	0,624	0,863
Service quality	0,659	0,858
Networking capability	0,716	0,852
Marketing capability of logistics enterprises	0,699	0,853
<i>Policies on the development of logistics systems: Cronbach' s Alpha = 0,901</i>		
Policies on market and logistics management	0,726	0,886
Policies on the development of logistics infrastructure	0,799	0,869
Policies on the development of logistics' science and technology	0,788	0,871
Policies on the development of logistics' human resources	0,697	0,893
Financial policies on logistics	0,785	0,877

The results of the independent variable test in Table 2 show that the corrected item total correlation coefficients are all greater than 0.3, the Cronbach's Alpha value if the type of small observable variables is lower than the Cronbach's Alpha value of each big observable variable. Therefore, the observable variables are suitable for the next research period.

Table 2. Results of testing the confidence of dependent variables

Observable variables	Corrected item – Total Correlation	Cronbach' s Alpha if item deleted
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<i>Logistics services development: Cronbach's Alpha = 0,742</i>		
High-speed developing logistics service market	0,372	0,735
Effective logistics services	0,591	0,672
Contributing to air pollution reduction	0,579	0,659
Contributing to noise pollution reduction	0,652	0,609

The test result of the dependent variables in Table 2 show that the confidence level of the scale is 0.742; the corrected item total correlation coefficients are all greater than 0.3, the Cronbach's Alpha value if all variables deleted are less than 0.742. Therefore, the observable variables are suitable for the next research period

4.2. Factors analysis

Exploratory factor analysis to discover observed variables loaded with multiple factors or observed variables with factor difference from the beginning.

Table 3. Results of factors analysis

Observable variables	The factor loading coefficients	Tested value
<i>Logistics infrastructure</i>		
Convenient transport infrastructure	0,666	Eigen = 2.793
Plenty and diverse warehouse infrastructure	0,701	KMO = .584
Good information technology infrastructure	0,784	Bartlett, Sig. = .000
Wide goods distribution system	0,830	The explanatory level of the observed variables = 55.87%
High-quality provincial system of logistics enterprises	0,746	
<i>Capability of logistics service providers</i>		
Human resources	0,808	Eigen = 4.056
Financial potential	0,668	KMO = .670
Infrastructure and equipment	0,744	Bartlett, Sig. = .000
Information technology qualification	0,728	The explanatory level of the observed variables = 57.94%
Service quality	0,764	
Networking capability	0,807	
Marketing capability of logistics enterprises	0,799	
<i>Policies on the development of logistics systems</i>		
Policies on market and logistics management	0,831	Eigen = 3.619
Policies on the development of logistics infrastructure	0,876	KMO = .824
Policies on the development of logistics' science and technology	0,870	Bartlett, Sig. = .000
Policies on the development of logistics' human resources	0,810	The explanatory level of the observed variables = 72.37%
Financial policies on logistics	0,865	
<i>Logistics services development</i>		
High-speed developing logistics service market	0,630	Eigen = 2.300
Effective logistics services	0,791	KMO = .581
Contributing to air pollution reduction	0,771	Bartlett, Sig. = .000
Contributing to noise pollution reduction	0,826	The explanatory level of the observed variables = 57.49%

The logistics infrastructure scale converges on 1 common factor; The factor loading coefficients >0.5 are considered significant; KMO value > 0.5 shows that factor analysis is appropriate; Bartlett's test is statistically significant, so the observed variables are correlated with each other in the population; The explanatory level of the observed variables is high, reaching a value of 55.87%

The Capability of logistics service providers scale converges on 1 common factor; The factor loading coefficients >0.5 are considered significant; KMO value > 0.5 shows that factor analysis is appropriate; Bartlett's test is statistically significant, so the observed variables are correlated with each other in the population; The explanatory level of the observed variables is high, reaching a value of 57.94%.

The Policies on the development of logistics systems scale converges on 1 common factor; The factor loading coefficients >0.5 are considered significant; KMO value > 0.5 shows that factor analysis is appropriate; Bartlett's test is statistically significant, so the observed variables are correlated with each other in the population; The explanatory level of the observed variables is high, reaching a value of 72.37%.

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The results of the factors analysis show that all independent variables are appropriate and can be used in the next regression analysis

4.3. Regression analysis

In order to evaluate the influence of concerned factors on the rapid and sustainable development of logistics services in Bac Giang province, the research team decided to carry out a regression analysis based on the below linear model:

$$PT_LOG = \beta_0 + \beta_1CSHT + \beta_2NL + \beta_3CS$$

To be specific, PT_LOG is the dependent variable

CSHT: Logistics infrastructure

NL: Capability of logistics service providers

CS: Policies on the development of logistics systems

β_i : regression parameters (with $i=0,1,\dots,3$)

Table 4. Result of multivariate regression

Independent Variables	Correlation Coefficient β	Sig	VIF
Constant	2.086	.000	
CSHT	.066	.353	2.959
NL	.476	.000	3.243
CS	.075	.226	4.610
R value	.505		
Durbin-Watson	1.862		
ANOVA	sig. = .000		

This result in: $R^2 = 0.505$; R^2 value shows that independent variables in the given model are able to give an explanation to 50.5% of the changes of the dependent variable.

In order to verify the autocorrelation of the population regression model, Durbin-Watson statistics in the regression analysis table are taken into consideration. Since the overall number of observations is 230 samples, the number of independent variables is 3, the significance level is 0.05, so the values $dL=1.769$ and $du=1.817$, therefore, Durbin-Watson value 1.862 will stay at the average of $\{du=1.817, 4-du=2.183\}$. This leads to the conclusion that the regression model does not violate autocorrelation.

To test the suitability of the overall regression model, we consider to the F value from the ANOVA analysis table. It can be seen that the sig value = 0.000, initially shows that the multiple linear regression model matches the data set and is available to use.

To test the multicollinearity phenomenon, we consider the VIF value in the regression results table, it can be concluded that the variance inflation factor (VIF) of each independent variable has a value less than 10, proving that the regression model does not violate the phenomenon of multicollinearity, which means the independent variables are not strongly correlated with each other.

Also based on the results of multivariate regression, it shows that all 3 independent variables of the model have the $p_value < 0.05$, in addition, the regression coefficients β are all greater than 0, so it is concluded that the independent variables are all significant and affects the dependent variable.

According to the results of the above table, the multiple regression equation is determined:

Logistics services development = 2.086 + 0.066*Logistics infrastructure + 0.476* Capability of logistics service providers + 0.075* Policies on the development of logistics systems

In conclusion, all 3 mentioned factors have an influence on the rapid and sustainable development of the logistics services in Bac Giang province. All factors positively affect the dependent variable. The capability

of logistics service providers has the biggest influence while the logistics infrastructure has the least impact on the sustainable development of logistics services in Bac Giang.

V. CONCLUSION

The research results show that to sustainably develop the logistics service industry in Bac Giang province, local authorities need to have a comprehensive impact on issues such as: Improving the quality of human resources for logistics, especially paying attention to the improvement of knowledge, skills, and attitudes of employees in participating in the logistics services providing system, regularly opening knowledge training courses on sustainable logistics development; In addition, it is necessary to invest in logistics infrastructure and facilities in the direction of modernization, enhancing information technology applications, innovating and improving the performance of enterprises in the supply chain; Actively propagate and disseminate to employees about the benefits gained from efficient and sustainable exploitation of logistics services, always ready to receive comments from employees in any form and have the opportunity to timely and satisfactory response mechanism; In addition, establishing an open, modern, and open policy mechanism to promote workers and attract businesses to cooperate with local authorities in developing the logistics service industry in a sustainable way.

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