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## ANALYSIS OF FACTORS AFFECTING E-LOGISTICS SERVICES ON URBAN MANAGEMENT AT HOCHIMINH CITY, VIETNAM

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**Abstract.** Vietnam's logistics industry with an estimated total value of US \$ 50-60 billion is currently growing rapidly (20 - 25% per year) and is expected to maintain double-digit growth for at least 5 to 10 next year, due to the breakthrough of the retail industry with high internet penetration and online shopping trends. According to the Vietnam E-Commerce White Paper 2018, the scale of the B2C e-commerce market was US \$ 6.2 billion in 2017. Vietnam is one of the fastest growing e-commerce markets in Southeast Asia. With this boom, the demand for logistics in e-commerce ecosystem is huge. Analysis of the factors affecting electronic logistics allows proposing a strategic solution for the development of e-logistics services in Ho Chi Minh City, and what is urgent according to the Logistics Development Plan of Ho Chi Minh City until 2025, with a vision to 2030.

**Keywords:** E-Commerce; E-logistics; Hochiminh City; Logistics; Urban; Vietnam

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**JEL Classifications:** R40, M10, R10

**Additional disciplines:** transport engineering; urban management

## 1. Introduction

Despite being a nation with the advantage of having plenty deep-water ports, the logistics industry has not been able to become a key economic industry due to many limitations. The reason is the non-uniform infrastructure of Logistics industry, which has confined the development of logistics activities. Meanwhile, e-logistics, which is both a tool and a solution for synchronous connecting the infrastructure for Logistics industry and the E-commerce industry, has still not been properly invested and developed (Tuan, 2018).

Ho Chi Minh City (HCMC) is a city with the advanced logistics system and holds the most important position in the Southern key economic zone as well as in the whole country. In the current period of international economic integration, it is necessary to develop a program for the transforming of Logistics into a key economic industry in accordance with the Decision No. 200/QĐ-TTg dated 14/02/2017 of the Prime Minister on the Action Plan. That would enhance competitiveness through increasing quality of Vietnamese logistics services until 2025 (VLA, 2018) and respective progress of E-commerce. However, i) A model allowing to connect e-logistics (as a coordinating center combining logistics and e-commerce) has not yet been formed; the operations of logistics and e-commerce industries thus has their own processes of distributing goods / services, what cause ineffectiveness; ii) The satisfaction level of purchasers via e-commerce channels and using online logistics is still low (HCMPC, 2017).

## 2. Literature Review

There a lot scientific works and scientific research projects related to e-logistics in urban management. Numerous attempts to integrate e-logistics – e-commerce with current logistics are being made (Vinalog, 2018; Vietnam Industry and Trade Information Center – Vitic, 2018). Some scientists (Giang, 2018) see bright prospects of Vietnam's e-logistics industry. The main logistics companies serving Vietnamese e-commerce market are focused on understanding e-logistics trends in urban management, in particular, which reflects the essential needs of the economy in general (RongViet, 2019). Policies for e-logistics and e-commerce infrastructure are researched by Ha (2018a). According the author, it is necessary to revise the Commercial Law adopted in 2005 and tune it with regulations in e-logistics and e-commerce area in Vietnam (Hy, 2015).

Scholars analyze factors affecting logistics and e-logistics (Vinh, 2007). Earlier Closs (1990) analyzed Logistics Simulation Modeling. According Nghi (2019, Vietnam logistics industry gives 'red alert' of lacking two million workers. Ha (2018b) focuses on a question how the Internet of Things promotes the "revolution" in logistics. Nevertheless, studies about the factors, affecting e-logistics, particularly, in Vietnam are relatively few, fragmented, and seems to have many limitations. Thorough research devoted to e-logistics strategy is still missing.

## 3. Research Methodology

### 3.1. Data Collection

The study uses information collected in recent years from relevant studies, reported data, plans, strategies etc. The sources were Vietnam Logistics Association, Vietnam E-commerce Association, leading experts and governmental agencies in Ho Chi Minh City (HCMC) and Vietnam. Apart from the relevant studies mentioned in overview of eralier research, the study also uses information from other research works, including : 1) *Domestic research work* of Dao (2011), on development of logistics services in Vietnam under the international integration conditions; research of lam (2012), which is devoted to analysis of experience in developing logistics centers in some countries in the world; work of Phuc (2018), who studied models and investment solutions in building a logistics center serving Hai Phong International Gateway Port in Lach Huyen; research of Hang (2012), tackling the quality issues of logistics services of Vietnamese transport enterprises in Ho Chi Minh City; reserach of Tuan

(2015), who studied governmental management of logistics services in Hai Phong port ; 2) *Foreign research works* by Charles (2011), who derived industrial logistics hub reference models for manufacturing based economies. Thereby, synthesis of theoretical and practical knowledge about e-logistics allowed us to build a model of factors affecting e-logistics. We conducted an in-depth survey with 20 leaders of organizations and enterprises and other experts, composed a questionnaire and questioned 200 respondents, what allowed to estimate a role of factors affecting e-logistics.

### 3.2. Analysis Methods

*Descriptive statistics* is based on the information and data collected from studies, reports, plans and strategies etc. It allows to analyse and assess the current situation of e-logistics in HCMC by comparing indicators related to e-logistics in HCMC and Vietnam.

*Qualitative research*: in addition to the reference of previous relevant research models, 200 experts, leaders, managers and employees of companies operating in logistics, e-commerce, express delivery in HCMC from 01/2018 to 03/2018 were used to verify impact of 7 independent variables (29 observed variables) to ensure objectivity and prove the research results.

*Quantitative research*: from the survey results with 180/200 answered questionnaire, the authors used SPSS 22.0 software to analyse data and evaluate impact levels of the factors affecting e-logistics in HCMC.

Based on the results of the analysis current situation of strengths, weaknesses, opportunities, and challenges for e-logistics was performed; SWOT analysis was done with aim to propose strategic solutions for e-logistics Ho Chi Minh City.

## 4. Data Analysis

### 4.1. Reliability Analysis of Measured Scales – Cronbach’s Alpha

*Cronbach’s Alpha of “Customers’ Perception” Scale.* Analysis of Cronbach’s Alpha of the independent variable “Customers’ Perception” including 4 observed variables resulted in the Cronbach’s Alpha coefficient = 0,709 > 0,6, which was within a good measuring range. The total correlation coefficients (this coefficient indicates the degree of "association" between one observed variable in the factor and the other, and reflects the contribution to the conceptual value of the factor of a particular observed variable) of the variables measuring this factor were all above 0,3. Additionally, the Cronbach’s Alpha if Item Deleted of all variables was lower than the Cronbach’s Alpha coefficient, so these 4 variables measuring this factor could be used in the following analyses (Table 1).

**Table 1.** Reliability Statistics – “Customers’ Perception” Scale

Cronbach's Alpha	Number of Observed Variables
0,709	4

*Cronbach’s Alpha of “Technology and Security” Scale.* Analysis Cronbach’s Alpha of the independent variable “Technology and Security” including 5 observed variables resulted in the Cronbach’s Alpha coefficient = 0,825 > 0,6, which was within a good measuring range. The total correlation coefficients of the variables measuring this factor were all above 0,3. Additionally, the Cronbach’s Alpha if Item Deleted of all variables was lower than the Cronbach’s Alpha coefficient, hence these 5 variables measuring this factor could be used in the following analyses.

*Cronbach's Alpha of "Legal Infrastructure" Scale.* Analysis Cronbach's Alpha of the independent variable "Legal Infrastructure" including 4 observed variables resulted in the Cronbach's Alpha coefficient = 0,759 > 0,6, which was within a good measuring range. The total correlation coefficients of the variables measuring this factor were all above 0,3. Additionally, the Cronbach's Alpha if Item Deleted of all variables was lower than the Cronbach's Alpha coefficient, hence these 4 variables measuring this factor could be used in the following analyses.

*Cronbach's Alpha of "Intellectual Property and Consumer Protection" Scale.* Analysis Cronbach's Alpha of the independent variable "Intellectual property and consumer protection" including 4 observed variables resulted in the Cronbach's Alpha coefficient = 0,757 > 0,6, which was within a good measuring range. The total correlation coefficients of the variables measuring this factor were all above 0,3. Additionally, the Cronbach's Alpha if Item Deleted of all variables was lower than the Cronbach's Alpha coefficient, hence these four variables measuring this factor could be used in the following analyses.

*Cronbach's Alpha of "Electronic Payment System" Scale.* Analysis Cronbach's Alpha of the independent variable "Electronic payment system" including 4 observed variables resulted in the Cronbach's Alpha coefficient = 0,900 > 0,6, which was within a good measuring range. The total correlation coefficients of the variables measuring this factor were all above 0,3. Additionally, the Cronbach's Alpha if Item Deleted of all variables was lower than the Cronbach's Alpha coefficient, hence these four variables measuring this factor could be used in the following analyses.

*Cronbach's Alpha of "Human Resources" Scale.* Analysis Cronbach's Alpha of the independent variable "Human resources" including 4 observed variables resulted in the Cronbach's Alpha coefficient = 0,898 > 0,6, which was within a good measuring range. The total correlation coefficients of the variables measuring this factor were all above 0,3. Additionally, the Cronbach's Alpha if Item Deleted of all variables was lower than the Cronbach's Alpha coefficient, hence these four variables measuring this factor could be used in the following analyses.

*Cronbach's Alpha of "Organization and Administration" Scale.* Analysis Cronbach's Alpha of the independent variable "Organization and administration" including 4 observed variables resulted in the Cronbach's Alpha coefficient = 0,865 > 0,6, which was within a good measuring range. The total correlation coefficients of the variables measuring this factor was all above 0,3. Additionally, the Cronbach's Alpha if Item Deleted of all variables were lower than the Cronbach's Alpha coefficient, hence these four variables measuring this factor could be used in the following analyses.

#### **4.2. Exploratory Factor Analysis (EFA)**

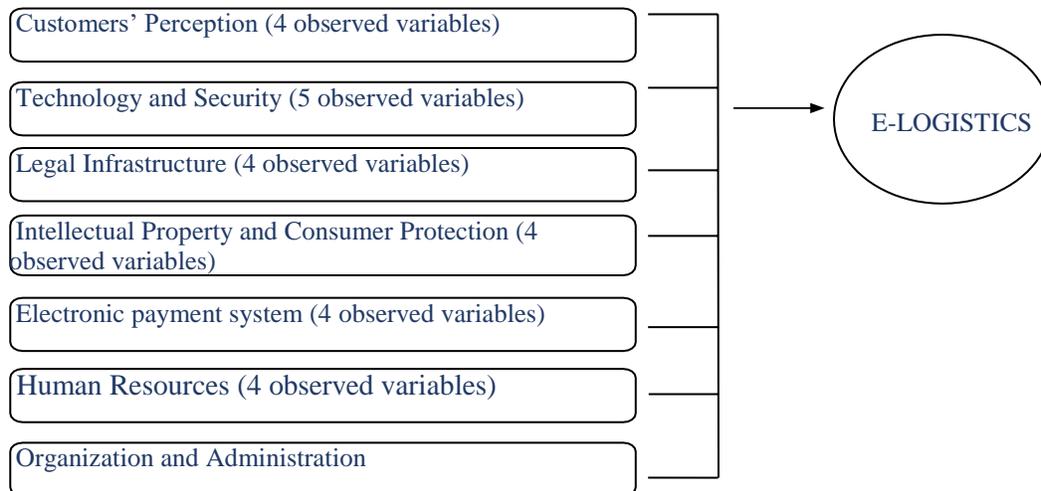
*EFA for the Scale of Factors Affecting E-logistics.* The scale of factors affecting e-logistics process consisted of 7 independent variables with 29 observed variables. After the scale was tested with the coefficient of reliability - Cronbach's Alpha, no variables were eliminated, therefore the author used all 29 observed variables in Exploratory Factor Analysis (EFA). The results were as KMO value = 0,727 ( $0,5 < \text{KMO} < 1$ ) proved that factor analysis for grouping these variables was appropriate. The Chi-square statistic of Bartlett's test reached 4247,467 and Sig.= 0,000, indicating that the observed variables were correlated on general scope (Table 2). The results from EFA showed the total average variance extracted of 68,965% (>50%), illustrating that these 7 factors could explain 68,965% of the data variance. This was an acceptable result and proved that grouping these factors together was appropriate. Stopping point in factor extraction was the 7<sup>th</sup> factor with Eigenvalues of 1,645>1, showing the suitability of factor analysing results. The observed variables had satisfactory factor loadings above 0.5 and none of them had factor loadings loading onto two factors simultaneously, therefore the scales reached the convergent value (Table 2).

**Table 2.** KMO Test of Sampling Adequacy - KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		<b>0,727</b>
Bartlett's Test of Sphericity	Approx. Chi-square	4247,467
	Df	
	Sig.	<b>0,000</b>

*Recalculate the Coefficient of Reliability Cronbach' Alpha of the Factors.* After the exploratory factor analysis (EFA), the author carried out a test to examine the adequacy of the measuring scale with the reliability coefficient Cronbach's Alpha. The demonstrated results of EFA indicated that the observed variables, which had been tested with the reliability coefficient of Cronbach's Alpha and the exploratory factor analysis (EFA) in turn, remained the same initial factor without any changes of the variables. From the results of EFA, 7 factors with 29 observed variables were deduced. After that, the factors were explained and renamed accordingly. Identification and explanation the factors was based on the recognition of observed variables with high factor loadings within the same factor. Hence, this factor could be explained with the variables, which had high factor loading within it. The EFA results also showed that the observed variables in each factor were unchanged, implying that the observed variables initially given by the author all measured the same concept related to the research problem, thus the author renamed them to the identical original names.

*Revised Research Framework.* The theoretical framework proposed 7 factors affecting e-logistics and 29 observed variables to explain these 7 factors. After testing the scale with Cronbach's Alpha và EFA, the groups of observed variables mostly belong to the unchanged factors. The revised research framework was exactly similar to the proposed one with the remained number of 7 factors and 29 observed variables (Figure 1).



**Figure 1.** Revised Research Framework

*Linear Regression and Model Testing.* Linear regression analysed affecting levels of 7 factors: (1) Customers' Perception; (2) Technology and Security; (3) Legal Infrastructure; (4) Intellectual property and Consumer protection; (5) Electronic payment system; (6) Human resources and (7) Organization and Administration. The multiple linear regression equation was applied to study the impacts of independent variables X1, X2, X3, X4, X5, X6, X7 on E-logistics. To analyse the regression equation, the author built its form as follows:

$$Y_i = \beta_0 + \sum_{i=1}^n \beta_i X_i$$

With: +  $Y_i$ : Result function - E-logistics activities  
 +  $\beta$  (0,  $i = 1 \div n$ ): affecting levels  
 +  $X_i$ : X1- Customers' Perception; X2- Technology and Security; X3- Legal Infrastructure; X4- Intellectual property and Consumer protection; X5- Electronic payment system; X6- Human resources; X7- Organization and Administration – which is the group of factors affecting the development of E-logistics.  
 $\beta_0$ ,  $\beta_i$ : the constant and regression coefficient of the factor  $i$  ( $i = 1, 2, 3, 4, 5, 6, 7$  respectively).

The study performed multiple regression by the Enter method: seven independent variables and dependent variable were included once and considered the statistical results related to the research problem. After putting the dependent variable and seven independent variables into regression, all independent variables have Sig. > 0,05, so they were all retained.

- Detecting the violation of necessary assumptions in the regression model: Regression analysis is not just a description of observed data from the overall results. Acceptance and interpretation of regression results are inseparable from assumptions observed in the sample, we have to generalise our conclusions to the relationship between the necessary internal variables and the diagnosis of violated assumptions. If assumptions violated, the estimated results are no longer reliable.
- Assumption of the independence of errors (no correlation between residuals): Durbin – Watson statistics could be used to test the correlation of adjacent errors. Results in Table 3 indicated that the value of Durbin – Watson statistics was 1,687, just under 2, which meant the assumption about no first-order correlations between residuals was accepted.

**Table 3.** Durbin – Watson Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0,816 <sup>a</sup>	0,666	0,653	0,04393	1.839

<sup>a</sup> Predictors: (Constant), X7. Organization and Administration, X5. Electronic Payment System, X3. Legal Infrastructure, X6. Human Resources, X4. Intellectual property and Consumer protection, X2. Technology and Security, X1. Customers' Perception

- There was no multicollinearity: Looking at the Collinearity Statistics column (diagnosis of multicollinearity), variance inflation factors (VIFs) of the independent variables in the model were lower than 2, meaning that multicollinearity did not happen (Table 4).
- Evaluating the adequacy of the regression model: From the results of Table 3. Durbin – Watson Test, it was showed that the Adjusted R Square was 0,653, lower than the R Square of 0,666 and using it to evaluate the adequacy of the regression model would be safer because it did not inflate the model suitability. The Adjusted R Square of 0,653 was higher 0,5, meaning that the linear regression model was formulated in accordance with the data up to 65% and had a fairly good explanatory level. It was also indicated that the relation between the dependent variable and the independent ones was relatively close. In conclusion, the model explained 65,3% of the impact of the factors on E-logistics and the rest of 34,7% was explained by factors outside the model.

**Table 4.** Multicollinearity Test

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	0,978	0,024		40.987	0,000		
X1. Customers' Perception	0,212	0,028	0,192	7.511	0,000	0,828	1.243
X2. Technology and Security	0,287	0,019	0,322	14.884	0,000	0,854	1.521
X3. Legal Infrastructure	0,132	0,018	0,489	7.377	0,000	0,864	1.728
X4. Intellectual property and Consumer protection	0,013	0,013	0,132	1.001	0,018	0,911	1.969
X5. Electronic Payment System	0,055	0,009	0,477	6.034	0,000	0,810	1.226
X6. Human resources	0,065	0,010	0,249	6.574	0,000	0,850	1.685
X7. Organization and Administration	0,050	0,010	0,600	5.079	0,000	0,839	1.191

- Testing the adequacy of the model: Analysis of Variance (ANOVA) (Table 5) gave the F value with Sig. = 0,000 (< 0,05), which meant the regression model was adequate to the collected data and the variables in the model all had statistically significance with the significant level of 5%. The F value of 49,028 was used to test H0 hypothesis: the regression coefficients of the independent variables  $\beta_1 = \beta_2 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = 0$  (there was no linear relationship between the independent variables and the dependent variable). As Sig. = 0,000 < 0,05, we rejected H0 hypothesis. Thus, the independent variables in this model had the relationships with the dependent variable.

**Table 5.** Anova<sup>a</sup> "Elogistics"

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	0,662	7	0,095	49.028	0,000 <sup>b</sup>
Residual	0,332	172	0,002		
Total	0,994	179			

<sup>a</sup> Predictors: (Constant), X7. Organization and Administration, X5. Electronic Payment System, X3. Legal Infrastructure, X6. Human Resources, X4. Intellectual property and Consumer protection, X2. Technology and Security, X1. Customers' Perception

<sup>b</sup> Dependent variable: Elogistics

- Regression equation: According to the objective and the topic of the study, the author chose a standardized regression coefficient (beta coefficient) to formulate the regression equation. From table 4, all variables were statistically significant with the values of Sig. = 0,000 (< 0,05). Therefore, there were 7 factors affecting E-logistics based on the standardized regression coefficient (beta). The comparison of the  $\beta'$  value showed that factor "X2. Technology and Security" had the biggest impact on E-logistics with  $\beta'2 = 0,322$ ; respectively the second and third affecting factors were "X1. Customers' Perception" with  $\beta'1 = 0,192$  and "Legal Infrastructure" with  $\beta'3 = 0,489$ ; while the fourth and fifth influencing factors were "Human resources" with  $\beta'6 = 0,249$  and "Electronic Payment System" with  $\beta'5 = 0,477$ ; the sixth affecting factor was "Organization and Administration" with  $\beta'7 = 0,600$  and the seventh factor was "Intellectual Property and Consumer Protection" with  $\beta'4 = 0,132$ .

From the above result, the equation illustrating the factors affecting e-logistics was:

$$Y = 0,978 + 0,192*X1 + 0,322*X2 + 0,489*X3 + 0,132*X4 + 0,477*X5 + 0,249*X6 + 0,600*X7$$

Hence, the linear regression model built from Y equation did not violate the necessary assumptions in linear regression. Based on the results of linear regression analysis, the author concluded that all the hypotheses of X1, X2, X3, X4, X5, X6, X7 were accepted with the statistical significance of 5% and the relationship between each factor and “ELOGISTICS” was direct proportion.

#### 4.2.1. *Descriptive Statistics with Likert Scale of the Factors Drawn From the Regression Analysis Results*

In order to have a basis for building solutions to identify factors affecting E-logistics, the author analysed the students’ assessments of each variable in the factor groups extracted from the multiple regression model.

- “*Customers’ Perception*” factor: The descriptive statistics result of Likert scale for the factor “*Customers’ Perception*” was rated above average (5 points/2=2,5 points) with the minimum of 4,0167 points. In “*Customers’ Perception*”, H11 “*Demand for online shopping and transaction*” was the highest rated factor with the average score of 4,6667 points.
- “*Technology and Security*” factor: The descriptive statistics result of Likert scale for the factor “*Technology and Security*” was rated above average – the lowest was 3,9833 points. In “*Technology and Security*”, The factor of H25 “*Information security of online transactions*” was rated the highest with the average score of 4,6667 points.
- “*Legal Infrastructure*” factor: The descriptive statistics result of Likert scale for the factor “*Legal Infrastructure*” was rated above average with the minimum of 4,1056 points. In which, H34 “*Procedures for resolving and handling disputes*” was rated the highest with the average score of 4,6667 points.
- “*Intellectual Property and Consumer Protection*” factor: The descriptive statistics result of Likert scale for the factor “*Intellectual Property and Consumer Protection*” was rated above average and the lowest was 3,9667 points. In which, H42 “*Safety and confidentiality of customer information*” was the highest rated factor with the average score of 4,6222 points.
- “*Electronic Payment System*” factor: The descriptive statistics result of Likert scale for the factor “*Electronic Payment System*” was rated above average – the minimum was 4,3722 points. In which, the factor of H52 “*Suitable forms of payment for customers*” was rated the highest with the average score of 4,6944 points
- “*Human Resources*” factor: The descriptive statistics result of Likert scale for the factor “*Human Resources*” was rated above average with the lowest score of 3,9611 points. In “*Human Resources*”, the factor of H63 “*Training human resources for the industry*” was rated the highest as its average score was 4,6056 points.
- “*Organization and Administration*” factor: The descriptive statistics result of Likert scale for the factor “*Organization and Administration*” was rated above average – the lowest score was 4,0167 points. In which, H74 “*Administration of E-logistics distributing channels*” was rated as the highest factor with the average score of 4,4278 points.

To sum up, analysis of descriptive statistical survey data preliminarily shows experts’ evaluation of factors affecting E-logistics at a high level. This explained that E-logistics activities are affected by 7 factors above. Meanwhile, to develop E-logistics, it is necessary to pay more attention to the 7 impacting factors, with details of important factors as follows: H11 “*Demand for online shopping and transaction*”; H25 “*Information security of online transactions*”; H34 “*Procedures for resolving and handling disputes*”; H42 “*Safety and confidentiality of*

*customer information*”; H52 “*Suitable forms of payment for customers*”; H63 “*Training human resources for the industry*” and H74 “*Administration of E-logistics distributing channels*”

### **4.3. Strategies and Solutions for Development of E-logistics in Ho Chi Minh City**

Based on the study results of 7 factor group affecting e-logistics strategies and solutions for developing e-logistics can be formulated. Hence, the research team proposed a number of strategic solutions for e-logistics development in HCMC as provided below.

#### ***4.3.1. Building an E-logistics Model with the Connection of E-commerce Activities and Multi-logistics Methods in the Fourth Industrial Revolution***

The creation of an e-logistics model connecting e-commerce activities with multi logistics methods in the Fourth Industrial Revolution (4IR) (Figure 2) brings great new chances to Vietnam in general, and to HCMC particularly. 4IR can shorten the process of industrialization and modernization by anticipating and leapfrogging to the development of higher technology level.

In the e-logistics model, e-logistics center is the core component of the system, playing a particularly important role for the efficiency of e-logistics activities; optimizing reserve levels; ensuring customer service quality; minimizing flow time of goods; reducing e-logistics costs. Additionally, the operation of e-logistics centers are necessary to achieve the socio-economic goals, such as: More effective supply chain management; Assuring efficient transfer of goods transported with various methods of transportation; Optimizing the utilization of global and national transportation systems; Supporting the local, national and regional socio-economic development through effectively responding to e-logistics activities for the production and trading of goods and services.

The basic functions and responsibilities of an e-logistics center are composed of: i) The solution of connecting and transporting; ii) The solution of storage; iii) The solution of loading and unloading goods; iv) The solution of collecting goods; v) The solution of dividing and selecting goods, which contrasts with collecting goods by separating goods into smaller lots; vi) The solution of optimal stock; vii) The solution of reserve logistics.

Apart from that, e-logistics center is also the place to carry out customs procedures, customs clearance, goods control and inspection etc., as well as other governmental managing functions in accordance with the regulations of domestic and international e-logistics activities.

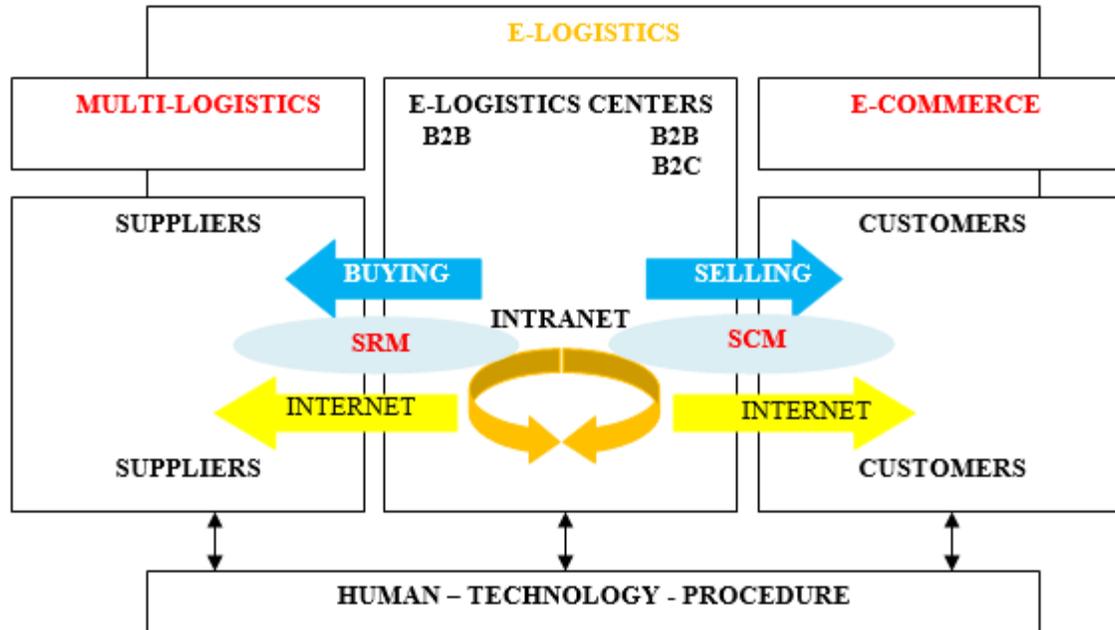


Figure 2. The E-logistics Model

Source: the authors

#### 4.3.2. Promoting Investment in Science and Technology Application Following the Trend of Forming E-logistics Industry, Adopting Policies to Support E-Logistics Enterprises in Terms of Invested Capital and Encouraging the Involvement of High-tech Enterprises

From the policies of the People's Committee of HCMC on the application of 4IR, it is an opportunity for the growth of e-logistics and security technology, connecting and applying logistics network, and express delivery. Investing in the technology of virtual reality (VR) and augmented reality (AR) connects e-logistics and e-commerce. In order to improve the efficiency of e-logistics activities, optimizing the process, thus enhancing the reliability in online transactions; Internet of Things (IoT), can be integrated with warehouses through sensors installed on shelves, goods. In addition, artificial intelligence (AI) technology helps develop self-learning capacity, serve to analysis and make predictions in the industry. Therefore, it is necessary to promote investment in the application of science and technology, to catch up with the international level following the trend of forming the e-logistics industry. Ho Chi Minh City needs to have policies to support a part of investment capital for E-logistics enterprises and policies to encourage high-tech companies to have different types of leases so that the enterprises do not have to spend a great amount of initial capital on technology.

#### 4.3.3. Building Logistics Centers, Combining with the Completion and Synchronization of E-logistics Infrastructure

Recognizing the importance of logistics service industry, the People's Committee of Ho Chi Minh City has assigned the HCMC Department of Industry and Trade to lead the building of a Logistics development Plan to 2025, with a vision to 2030. Based on the assessment of current situation along with researching international experience, the Plan needs to offer effective solutions to develop logistics into a key service industry of the city, a focal point of the region and to contribute to the reduction of logistics costs. Accordingly, planning of the city logistics industry is necessary to focus on infrastructure development, which determines the location and scale to establish of three logistics centers in order to connect goods transport between Ho Chi Minh City and other

localities. This task must meet two requirements: the first one is the storage, transshipment and supply of goods for the distribution chain of the inner city; while the second requirement is a transshipment, distribution of goods between Ho Chi Minh City and other provinces, cities, import-export goods through the city gateway (HCMPC, 2017).

#### ***4.3.4. Exploiting the Industry-focused Enterprises Network with Diversified Forms of Online Transactions, in Order to Share and Jointly Utilize the Industry Resources***

The deficiencies of capital and human resources are the two basic factors, which result in the incompetency of domestic logistics enterprises compared to foreign companies. Apart from that, the application of information technology is also restrained, most of the websites of domestic Logistics enterprises lack the utilities that customers need such as order tracking, document tracking, ship/train schedule, e-booking etc. Currently, domestic companies are striving to upgrade the supply of logistics services to 3PL; to develop e-logistics and to manage effectively the supply chain. Several enterprises have also been involved in specific 3PL strategic models such as Vinafco, Saigon Newport Coporation, Transimex, ITL, Gemadept and Vinalink (Nam, 2018). Therefore, Ho Chi Minh City needs to strengthen the exploitation of the industry-focused enterprise network through the establishment of e-logistics centers, combining with the development and application of science and technology into e-logistics, with a variety of online transactions so as to share and take advantage of the industry resources.

#### ***4.3.5. Increasing Trainings, Improving the Quality of Human Resources in the Industry, Fostering Human Resources of the Enterprises***

In Ho Chi Minh City from 2018 to 2025, the demand for human resources of economic sectors is about 100,000 workplaces, accounting for 30% of the total demand for human resources, of which logistics needs about 18,000-20,000 people per year, including 25% of employees from universities, 30% from colleges, 25% from vocational schools and 20% from primary vocational schools. Thus, HCMC should develop a two-way linkage model between the enterprises and educational institutions, enhance the quality of human resources, construct and standardize the training programs for e-logistics (Tuan, 2015; Quyet and Lan, 2020).

#### ***4.3.6. Completing the Legislation on E-logistics***

Nowadays, the concept of logistics and e-commerce is broad and covers many aspects of administration. Therefore, there must be a complete and strict legal corridor to create conditions for the expansion of e-logistics services in general as well as e-commerce and logistics. Accordingly, it is necessary to amend and supplement the contents of e-logistics in the Commercial Law, the laws on e-transactions, towards the law of e-commerce, logistics, and e-logistics. In addition, there are many agencies involved in management, but a joint operating agency on e-logistics has not been found yet. In order to facilitate the development of these activities, the authority managing logistics services should set up an intersectoral coordinating committee on e-logistics (from relevant functional departments). This will help the industry management to be more effective, contributing to accelerating the growth of e-logistics service industry (Trang, 2018; Robeson and Copacino, 2011).

## **5. Conclusions and Recommendations**

The results of linear regression analysis have revealed that e-logistics is affected by 7 groups of factors: 1) Customers' perception; 2) Technology and security; 3) Legal infrastructure; 4) Intellectual property and consumer protection; 5) Electronic payment system; 6) Human resources; 7) Organization and administration. At the same time, in order to develop e-logistics, it is necessary to pay more attention to the above 7 affecting factors, with the important details as follows: i) Demand for online shopping and transactions; ii) Information security of online

transactions; iii) Procedures for resolving and handling disputes; iv) Safety and confidentiality of customer information; v) Suitable forms of payment for customers; vi) Training human resources for the industry; vii) Administration of E-logistics distribution channels (Quyet and Hai, 2020; Van, 2020). The research contributes to the systematization of the theoretical basis related to electromagnetic logistics (e-logistics), which is a reference for students, students of logistics, e-commerce, express delivery, transportation etc., as well as providing scientists with references for the next research directions in this field in the city Ho Chi Minh City and Vietnam.

Along with the analysis of current situation, the research team has proposed a number of strategic measures for the development of e-logistics in HCMC, including: 1) Building an e-logistics model with the connection of e-commerce activities and multi-logistics methods in the Fourth Industrial Revolution; 2) Promoting investment in science and technology application following the trend of forming e-logistics industry, adopting policies to support e-logistics enterprises in terms of invested capital and encouraging the involvement of high-tech enterprises; 3) Building logistics centers, combining with the completion and synchronization of e-logistics infrastructure; 4) Exploiting the industry-focused enterprises network with diversified forms of online transactions, in order to share and jointly utilize the industry resources; 5) Increasing trainings, improving the quality of human resources in the industry, fostering human resources of the enterprises; 6) Accomplishing the legislation on e-logistics. The research still has certain limitations: *Firstly*, this study was conducted only in Ho Chi Minh City, so the research results are of practical value only to the locality. For other schools or for other localities in particular and Vietnam in general, the results may be different. *Second*, for the collection of information was done by distributing the survey form directly to the respondents. In this process, although the authors tried to explain to the respondents, the phenomenon of dishonest, inaccurate, and non-objective answering, alas there are no guaranties, that all the risks were avoided. *Third*, researchers encountered time constraints and other restrictions. As the result, the study is conducted with a relatively small number of samples, so it does not completely reflect the factors affecting e-logistics services in the city Ho Chi Minh. These shortcomings can serve as suggestions and orientations for the next research to overcome and complete.

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