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Developing the Logistic Services in Hai Phong Port, Vietnam

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Abstract
The purpose of this study is to identify bottlenecks in the supply and use of logistic services in Hai Phong. The paper will mention the factors affecting logistic development such as economic factors, infrastructure and competitive pressures in the industry. In addition, it is assessed the current situation of demand and supply systems of logistics enterprises in Hai Phong. Therefore, it can be summarized that Hai Phong has not yet taken full its advantages and failed to meet ASEAN's logistics integration requirements.
Keywords: logistic services, infrastructure, Hai Phong Port, ASEAN logistic integration

1. Introduction

The development of logistics and logistics services is one of the most important elements of promoting trade and commerce with countries around the world. It is as a key economic function, a tool for the success of businesses in the manufacturing sector, as well as the service sector.

In Vietnam, with the desire to promote commercialization, trade with other countries in the world, Vietnam has put forward a comprehensive strategy for the development of the service sector by 2020 (Duong, 2017). Thus, the basic orientations for the development of logistics services to 2020 are:

(1) Considering logistics is a key factor promoting the development of the production of distribution systems in other service sectors
(2) Formation of the third party logistics (3PL)
(3) The growth rate of the logistics market is 20-25% per year. The ratio of outsourcing logistics to 2020 is 40%. (Duong, 2017)

Apparently, it creates many opportunities and challenges for the logistics industry in Vietnam. Logistics integration provides an opportunity for Vietnam to develop partnerships, expand export markets, contribute to economic restructuring, and reform the growth model. However, on the path to achieving the goal of logistics integration, Vietnam is facing many challenges such as poor logistics infrastructure, leading the cost of logistics in Vietnam is much higher than that of other countries; Small-scale logistics enterprises with unprofessional operation; Lack of well-trained logistics human resources and qualified logistics management; Inadequate legal environment, differences in the legal system, customs clearance and administrative procedures.

Faced with these challenges, Vietnam needs to provide essential solutions to improve logistics services throughout the country, especially in two major ports: Hai Phong Port and Saigon Port. Additionally, the operating of logistics services in Hai Phong is incompetent, this requires Hai Phong to have specific solutions on investment, and management and exploitation to overcome the problems related to the development of the port and logistics services. Therefore, the objective of this paper is to evaluate the logistics system in Hai Phong City to meet the ASEAN logistics requirements. Among the many types of logistics services provided and used in Hai Phong, this paper focuses on the logistics services for export and import of goods by the sea which accounts for over 90% activities of logistics services in Hai Phong.

2. Literature reviews

Manufacturing companies can make their own logistics or outsource logistics activities from logistics service providers. Consequently, the term “logistic service” begins with this outsourced activity and then there are many books and studies researching about this issue. In the macro perspective, the typical researches are: "Connecting to Compete: Trade Logistics in Global Economy" (World Bank, 2007, 2010, 2012); “Efficient Logistics: A Key to Vietnam’s Competitiveness” (World Bank, 2014) "Development Study on the North-South Economic Corridor" (Asian Development Bank, 2007); “National Logistics System” (Pavel Dimitrov, 2002). In the micro perspective, it often talks about the logistics in the business operation: There are also a lot of micro logistics materials, specifically: "Fundamentals of Logistics Management” (Lampert et al.,1998), "Logistics and Supply Chain Management" (Christopher, 2011) or "Business Logistics: Supply Chain Management" (Ballou, 2003); “Principles of Supply Chain Management” (Joel D. Wisner, Keah-Choon Tan, G. Keong Leong, 2011).

In Vietnam, logistics outsourcing is up to 40% of manufacturing enterprises (Phong, 2016) so it can be seen that the potential development of logistics services in the future. Vietnamese authors also have their own views about the logistics terms in general and in particular. The typical projects on logistics research show the reality of the logistics industry as: "Development of services Logistics in Vietnam in the context of international integration" (Dang Dinh et al., 2011). With the participation of many professors, data collection through interviews in 10 provinces and cities across the country, this is the largest scale research to date related to

logistics in Vietnam, mainly focus on logistics services of business enterprises in Hanoi. Furthermore, this paper also refers from other projects such as "Development of logistic services in Ba Ria Vung Tau in the period 2011 and 2020", "Development of logistic services in the field of transportation in Vietnam until 2020" by the Ministry of Transport, Vietnam Maritime Administration.

3. Methodology

3.1. Data

This paper often uses the secondary data which was collected from Government agencies, Ministry of Transport, Vietnam Maritime Administration, Hai Phong Maritime Ports Authority, Haiphong Statistical Office, World Bank (WB) from 2012 to 2016. The enterprise list was selected from the website http://yellowpages.vnn.vn/ which is a reliable source of Vietnam.

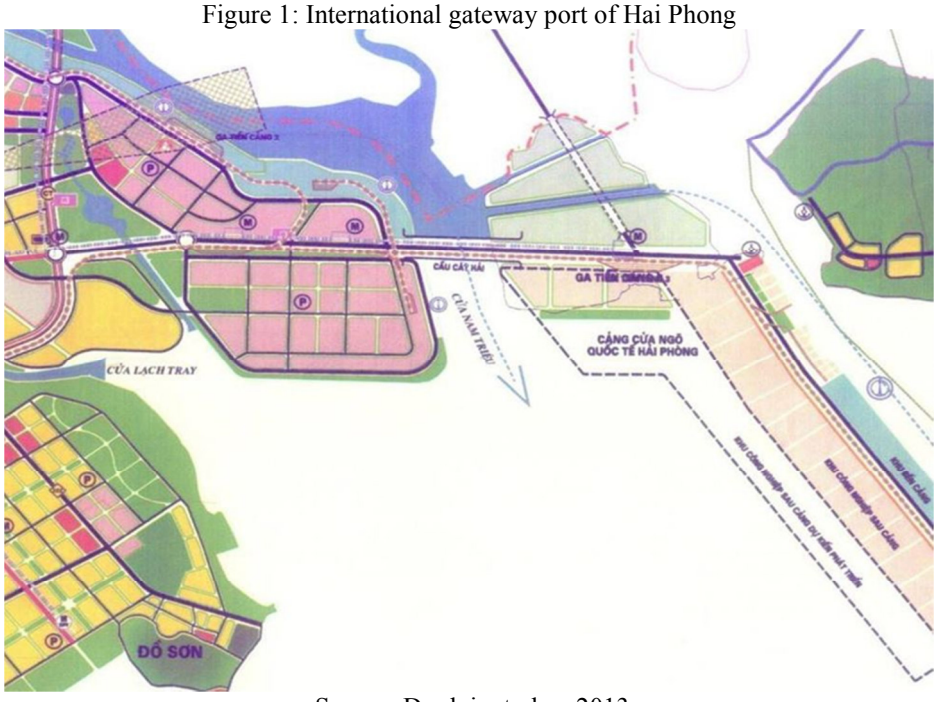
3.2. Logistics service assessment

There are some typical models to evaluate products and service such as Servqual model, Technical Quality Assessment Model (Gronroo, 1984), Model of service quality gaps (Parasuraman, 1985). However, the paper does not follow any particular model, but incorporates the highlights of the assessment models, particularly the Quality Assessment Model Criteria of Servqual and then brings out some assessments for logistics services in Hai Phong based on ASEAN logistics integration requirements.

4. Findings

4.1. Overview of Hai Phong Port

Figure 1: International gateway port of Hai Phong



Source: Dredgingtoday, 2013

Haiphong port now includes more than 40 ports with various functions such as bulk cargo transport, materials, steel, containers, liquefied petroleum gas (petrol, oil, gas). Besides the general port – Hai Phong port with the total length of wharf of 3500m, there are other small-scale seaport businesses in Hai Phong such as Vat Cach, Doan Xa and Dinh Vu Port JSC., And some new ports such as Dong Hai, 128 Hai Quan, Green Port, DAP Dinh Vu. Hai Phong port system has been developing in both quantity and quality. With a total length of more than 10.5 km, it occupies a quarter of the total wharf length in Vietnam. There are five wharves for 20,000 DWT vessels, 13 wharves for container handling, in which 8 wharves are equipped with modern handling equipment (Dredgingtoday, 2013).

In addition, Hai Phong port is a member of several associations such as Vietnam Seaport Association (VPA), ASEAN Port Association, Vietnam Ship Owners Association, Vietnam Association of Shipping Agents and Intermediate, Vietnam Freight Forwarders Association. Moreover, Hai Phong port is a member of IMO Vietnam, which participates in International Ship and Port Facility Security Code (ISPS) and International Convention for the Prevention of Pollution from Ships (MARPOL 73/78), member of Vietnam Chamber of Commerce and Industry (VCCI). The port also co-operates with Zhanjiang Port (China), Rotterdam

(Netherlands), Genoa (Italy), and Seattle Port (USA).

4.2. Factors affecting the development of logistic service in Hai Phong

4.2.1. Economics

- *GDP Growth Rate*

Hai Phong is a city in the northern key economic region, where economic, commercial and service activities are developing, and attracting domestic and international investment. Economic growth in the city remains stable, always growing at a rate higher than the GDP growth rate.

Table 1: GDP growth rate of Hai Phong over the years

Unit: Percentage (%)

Year	2012	2013	2014	2015	2016
GDP growth rate	10,96	11,93	8,12	7,15	8,53

Source: Hai Phong Statistics Office

- *The export-import turnover growth rate*

Table 2: Export-import turnover in Hai Phong over the years

(Unit: million USD)

Export – Import Turnover	2012	2013	2014	2015	2016
Export	1.954,1	2.318,6	2.626,9	3.012,54	3.570
Import	1.981,4	2.363,9	2.703,2	3.075,441	3.560

Source: Hai Phong Statistics Office

Table 3: Economic growth rate in Hai Phong over the years

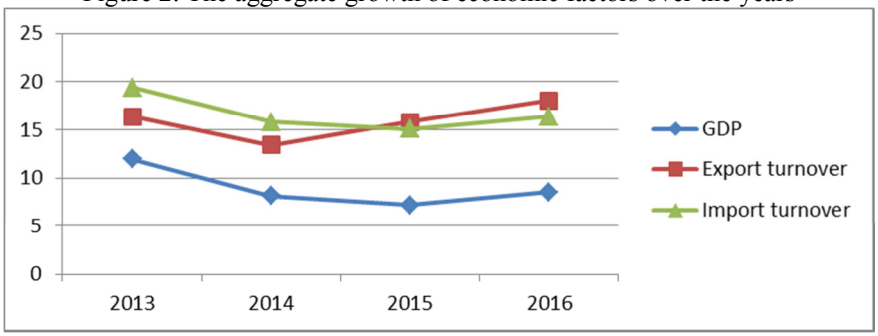
Unit: Percentage (%)

Economic growth rate	2012	2013	2014	2015	2016
GDP growth rate	-	11,93	8,12	7,15	8,53
Export turnover growth rate	-	16,35	13,4	15,81	18,03
Import turnover growth rate	-	19,38	15,8	15,07	16,35

Through Table 3 and Figure 2, it can be seen that the growth of GDP and the growth of export-import turnovers in Hai Phong have the same tendency. Hence, the GDP and import-export turnover factors are interrelated, mutually supporting each other to grow and develop together. Therefore, Hai Phong needs to pay close attention to these three factors in the development of the logistics industry.

In addition, through the econometric panel model, these three factors have a positive influence on the growth rate of total freight turnover in Hai Phong over the years (See more in Appendix)

Figure 2: The aggregate growth of economic factors over the years



The volume of cargo through Hai Phong Port

Table 4: Volume of cargo through Hai Phong Port over the years

Unit: million ton

	2012	2013	2014	2015	2016
Volume of cargo through all Vietnam Port	259,145	285,580	294,550	326	370,3
Volume of cargo through Hai Phong Port	38,41	42,65	44,67	57,24	65,80
Export	6,43	7,53	8,80	10,39	11,95
Import	17,37	18,24	18,2	19,15	22,02
Domestic	14,61	16,89	17,63	27,70	31,84
In there					
Container goods	20,35	23,39	29,22	32,48	37,36
Synthetic goods	15,48	16,48	12,48	21,21	24,37
Liquid cargo	2,59	2,78	2,97	3,54	4,07

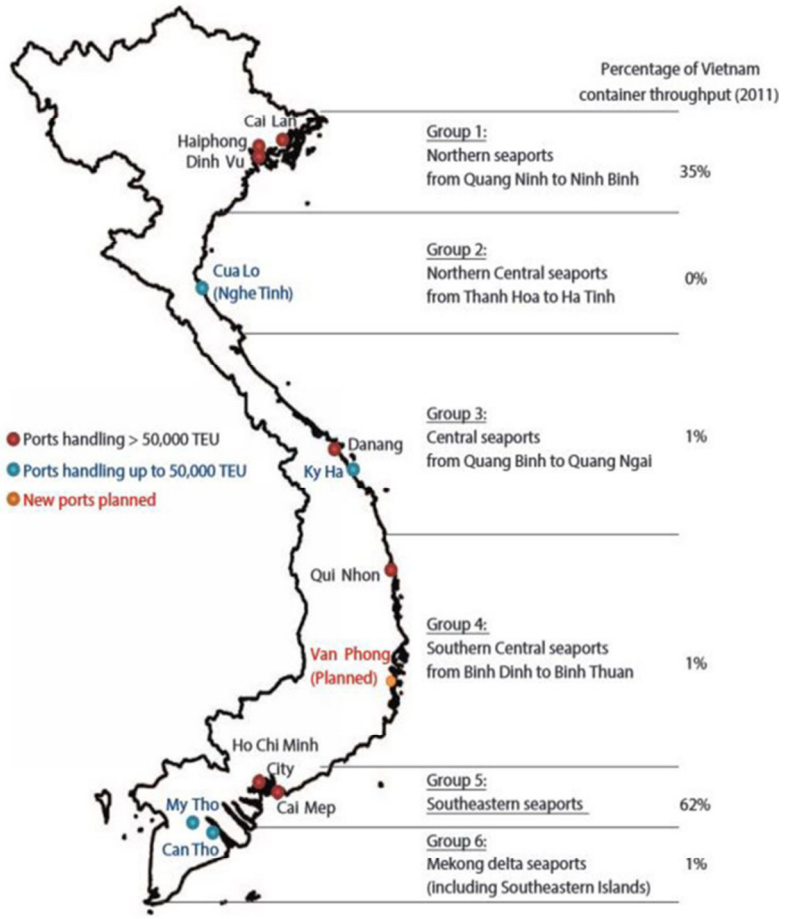
Source: Vietnam Maritime Administration

It can be seen from the table above, the cargo through Hai Phong port is increasing every year. Due to the increase in the demand for good transportation in the world, the volume of cargo through Hai Phong Port also increases. It is clearly realized the potential development of logistic services in a recent period.

4.2.2. Current situation of infrastructure in Hai Phong

- *Container port system*

Figure 3: Distribution of Vietnam's seaport system



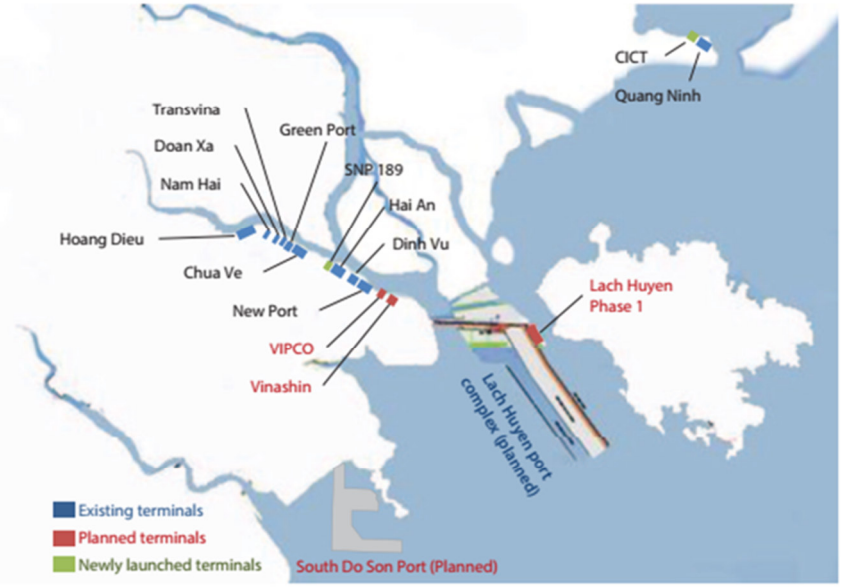
Source: World bank

The container port system in Hai Phong consists of 11 ports with a total length of 4,926.5m, the longest berth is about 1,000m and the shortest berth is about 150m, the average is over 400m/berth. The wharves are generally small scale, mainly belong to Hai Phong Port Co., Ltd, some new wharves are exploited by joint stock companies such as Hai An, Nam Hai, and Dinh Vu. There have been a lot of changes since the joint-stock companies went into operation. At present, most of the shares belong to Dinh Vu Port Development and Investment Joint Stock Company (World Bank, 2014).

According to the report "Efficient Logistics: A Key to Vietnam's Competitiveness" published by the World Bank in 2014 (Figure 3), the flow of containers through Hai Phong port is the second in Vietnam. However, the situation in the North ports is over-investment, leading to lack of comprehensive measures and ineffective performances.

Container ports in Hai Phong operate in a fragmented manner leading to inefficiencies and wasteful investment. It is causes of the ports' scale that too many ports have appeared in Hai Phong but no deep-water port can meet the requirements, excepting Lach Huyen Port which is expected to operate at the end of 2017.

Figure 4: Vietnam Fragmentation of the Hai Phong port system



Source: Efficient logistic (World Bank, 2014)

- *Warehouse system*

There are 17 CFS warehouses, bonded warehouses, inland warehouses with the total area of 140,000m2, of which 52,948m2 are CFS warehouses and 7,600m2 bonded warehouses. The volume of each warehouse is unequal because of the competition in service quality and customer care policy by operators. CFS warehouses are well-exploited, with relatively high throughput, including Vinconship, Nam Phat, Vietfracht.

- *Container depot system*

Total container depots in Hai Phong are 41 yards with the total area of 195.7 hectares and a capacity of 189,400 TEUs. At present, the depots are basically meeting the demand for cargo. Due to the influence of the general market, the throughput of containers in the yards is reduced; so exploiting the container depots is more and more difficult. Port operators tend to move towards Dinh Vu Industrial Zone in order to centralize and be convenient road traffic after the completion of the 5B expressway project.

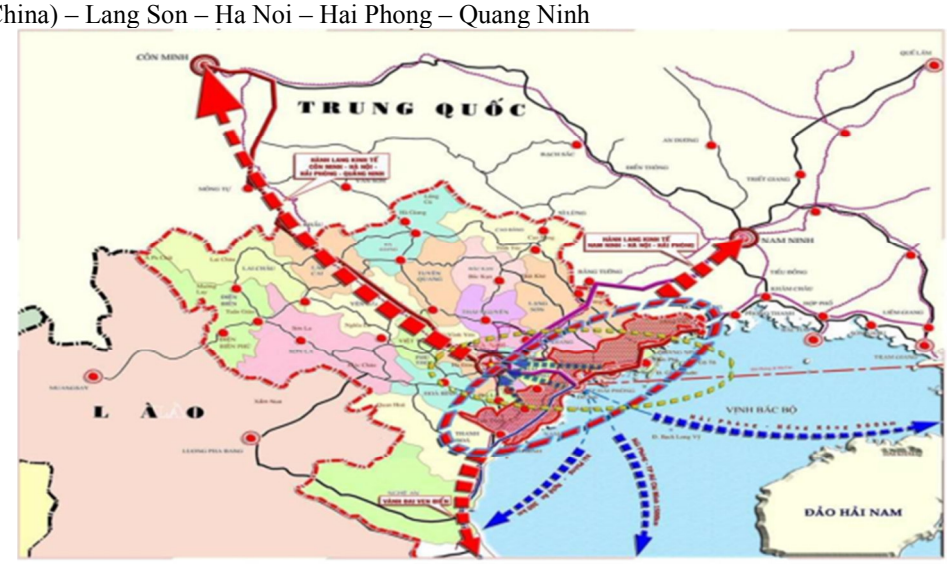
- *Transportation system connecting Hai Phong harbor*

The road system to Hai Phong harbor mainly through three main national highway which is Highway 5, Highway 10. Although these highways have been upgraded and invested, they have still deteriorated due to the increase in traffic density. It is expected that after the Highway 5B is completed, the road system connecting Hai Phong port with the northern economic sectors can ensure smooth transportation without causing traffic jams.

- *The economic corridors go through Haiphong.*

By 2030, Vietnam will set up 4 economic corridors go through Hai Phong including Hai Phong - Hanoi - Lao Cai; Hai Phong - Quang Ninh - Mong Cai; Hai Phong - Thai Binh - Ninh Binh; Hai Phong - Hanoi - Lang Son.

Figure 5: Economic corridor: Kunming (China) – Lao Cai – Ha Noi – Hai Phong – Quang Ninh and the corridor: Nanning (China) – Lang Son – Ha Noi – Hai Phong – Quang Ninh



Source: China.org, nd

The formation of these economic corridors helps Hai Phong and other provinces to develop and build a logistical system which promotes trade and connects Vietnam with neighbor countries; especially, China. From that, Hai Phong and other provinces have actively built solid transport infrastructures such as road systems, railways, inland waterways, and airfreight.

- *Railway system*

At present, Hai Phong is the only port which has a railway system in Vietnam. However, according to the statistics of Hai Phong Department of Transport, Hai Phong ports now have large cargo throughput, but 70% transported by road, 20% by waterway and only 3% by railway. Hence, it can be said that railway transportation has not yet played its advantages and has not become the main means of transporting cargo. As a result, railway systems of Hai Phong should be renovated and developed as soon as possible in order to connect ports effectively.

- *Waterway System*

With 19 river routes linking with many regions in the North, the cargo through inland waterway accounts for about 20%, mainly transporting goods to coastal areas. Currently, most of the river systems are shallow, so it does not guarantee the safety of ship operation. Therefore, it can be said that the river transport system in the North can hardly develop and take the place of road transportation.

- *The navigable water of Hai Phong*

Navigable waterway has recently been improved and upgraded significantly. The fairway of the shallowest areas is about -7.8m so it allows the 30,000DWT vessel to enter. Although new ports have been built such as Dinh Vu, Tan Vu has a deeper drainage system; sedimentation is seriously affecting the operation of the vessels.

4.2.3. Competition environment

There are two biggest pressures in the logistics service market in Hai Phong that is competitive pressure within the industry and from customers.

In term of competitive pressures within the industry, there are many service providers in Hai Phong market including domestic enterprises and foreign enterprises. Accordingly, the number of foreign enterprises is about 2-3% of total logistics service providers in Hai Phong, but can account for 80% of the market share (Thanh, 2015). The high difference of market power between foreign corporations and local firms has put a lot of pressure on logistics service providers in Hai Phong. In addition, price and logistics costs made by domestic suppliers, makes the market become quite severe.

Competitive pressure from customers has become a concern for supplying companies. Customers of logistics service providers usually include domestic import-export companies, foreign companies, corporations which require integrated logistics into the supply chain such as Dell, Toyota and Big C (Thanh, 2015).

4.3. Real situation of logistics development in Hai Phong

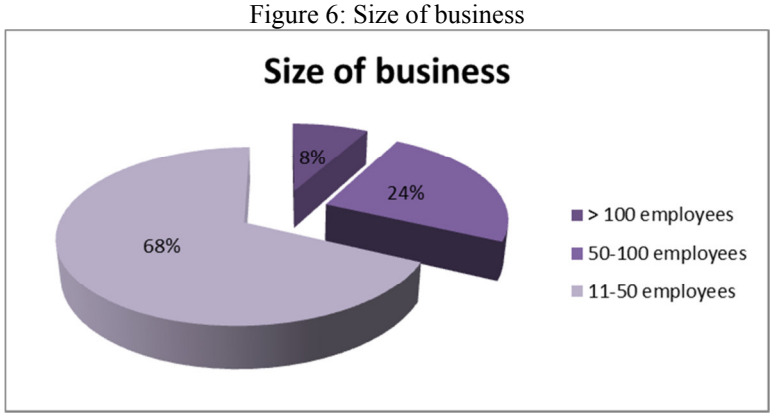
4.3.1. The demand for logistic service

The customers of logistics providers are mainly domestic and foreign import-export companies. The demand for local customers is only simple logistics services with the low added value such as domestic transportation, customs clearance, warehouse services; thus all most enterprises have this kind of customer.

In term of foreign companies, the demands of them are mainly international transport, inland sea transport which has high value added. The enterprises having this source of customers are foreign shipping line agency or contractual agreements. In fact, foreign firms often require integrated services into the supply chain and with this demand, very few local firms can supply. Hence, this customer base is still potential for Hai Phong service providers to exploit (Dang Dinh, 2010).

4.3.2. The supply of logistic service

Figure 6: Size of business



Source: Yellowpages, 2017

There are about 200-300 logistics service providers in the logistics market in Haiphong, accounting for 30% of total logistics service providers in the country (yellowpages, 2017). Many small and medium enterprises (11-50 employees) and very small companies (less than 11 employees) account for more than 70% of the logistics services market in Hai Phong, medium enterprises (50-100 employees) account for about 20% of the market, the rest are large enterprises (over 100 employees) account for less than 5% of the market (yellowpages, 2017).

SME is mostly limited liability companies with a capital of $100,000-$300,000, so the barriers to entry and exit of SME are not high. Therefore, due to the low threat of entrant, the logistics service market in Hai Phong operate fragmentally, inconsistently and cannot compete with other countries in the ASEAN area.

Almost all large companies are state-owned or joint stock companies so the barrier to enter and exit market is very high. With the capital advantage, these firms mostly invest to warehousing facilities, loading and unloading equipment, transportation, container systems and other monopoly logistic activities such as port operation, railway transport, inland, and waterway. Accordingly, more than 95% Hai Phong's market shares are internal logistic enterprises and only 2-3% of which are foreign corporations.

4.3.3. Types of logistic service

The logistics service industry is playing an important role in the process of economic integration and development in Vietnam and is also a popular and prominent service sector in Hai Phong. According to the business associations, there are about 1,200 logistics service providers in the whole country. The Hanoi - Hai Phong area accounts for about 40% of the enterprises operating in the region (equivalent to the whole market in Ho Chi Minh City). In particular, logistics services activities are mainly freight forwarding services, warehousing, loading and unloading, and transportation agents

- *Warehouse*

The real situation of warehouses in Hai Phong is built for a long time, so the infrastructure and equipment caused many inadequacies. Moreover, due to backward technology and mainly manual labor, so the large number of company is small scale.

- *Transportation*

Table 5: Compilation of transport statistics in Hai Phong over the years

	2012	**2013**	**2014**	**2015**	**2016**
Volume of handled cargo (thousand ton)	1,081	1,191	1,257.7	1,181.6	1,332.3
Handled cargo volume growth rate (%)	7	10.17	5.6	-6.05	12.8
Volume of transported cargo (thousand ton)	71,349	82,733	90,939.9	100,819	109,138
Transported cargo volume growth rate (%)	17	14.61	12.86	10.86	8.3
Total revenue of transportation (million USD)	445.4	585.02	13.590	598.09	811.17
Total revenue of transportation growth rate (%)	18.3	17.7	5.7	22.26	10.9

Source: Hai Phong Statistics Office

Table 6: Compilation of transport statistics in Hai Phong

	2015	**2016**	**Proportion**
Volume of transported cargo (million ton)	100,819	109,138	108.3
Roadway (million ton)	69,558	76,344	109.8
Revenue of cargo transportation (million USD)	731.25	811.17	110.9
Roadway (million USD)	22.98	28.96	126.0

Source: Hai Phong Statistics Office

Table 5 and Table 6 show that two types of transport, which are highly interconnected with ocean freight, are roadway and railway transport. Accordingly, in the years 2015- 2016, road transport accounted for 69% -70% of the total transported cargo volume and recorded a growth rate of 9.8%, higher than the growth of total cargo transport volume at 8.3%. However, rail transport services are less advantageous, accounting for an average proportion of 1.34% of the total volume of goods from 2012 to 2016.

4.4. Evaluation of the logistic service

4.4.1. Evaluation of the diversification of logistic service

The logistics sector covers a wide range of logistics services. Service enterprises may provide single or several types of services or may supply services in accordance with customer requirements. In fact, most businesses are only capable of providing single services, in other words, one or some stages of the supply chain such as delivery, warehousing, customs clearance or inland transportation. That is the strength of logistics service providers in Vietnam in general and Hai Phong in particular. However, to provide more value-added logistics services such as international sea transportation and inland sea transport, domestic service providers have to cooperate with foreign shipping lines in Vietnam in order to offer the perfect service package.

Warehousing and transport services are the two most popular logistics services offered by local companies. It can be seen that the companies providing logistics services in Hai Phong have the strength of warehouse services, transportation and always exploit this strength in the logistics industry so as to compete with foreign logistics enterprises.

4.4.2. Evaluation the warehouse service

Warehouse services are relatively high value-added activities and are the strengths of domestic logistics enterprises, which is the only factor that can compete with foreign businesses.

The warehousing activities are quite diversified, mainly for separating goods or dividing large lots into many small lots for many customers and maintaining the material for production. Therefore, warehousing service providers generally focus on exploiting services for export and import consignments (FCL, LCL) and leasing warehouses for storage materials. Therefore, revenue from this service is mainly based on import and export sources.

Besides, according to “Efficient Logistics: A Key to Vietnam’s Competitiveness” research, the types of a commodity in the warehouse extremely limited. It is often the ordinary goods which have the most common way of preservation. Warehouses for frozen commodities, chemicals, dangerous goods are provided by very few companies. Hence, most businesses focus too much on the warehouses for ordinary commodities, resulting in the duplicate service in logistics industry in Hai Phong market. If businesses know how to exploit and expand their warehouse business with new services, revenue will not only increase, but also attract significant customers (World Bank, 2014).

4.4.3. Evaluation the transportation

Most of the enterprises involved in providing logistics services in Hai Phong are able to provide at least three types of services: domestic shipping, warehousing service, and customs clearances. As for larger enterprises (SME), they are capable of providing international sea transport services. Most of these companies have no vessels; however, the company will associate with a partner, the international shipping lines. Although the rate of international sea transport services provided by domestic logistic companies is quite large (Lahiri, 2015), the number of customers using the service is not high. This phenomenon occurs because the demand for services at domestic import-export companies is low; they usually select low value-added services such as customs services, local transportation. However, the foreign import-export companies or large manufacturing companies tend to seek the major shipping lines or 3PL suppliers, who can provide a full logistics service package. Thus, if the domestic logistics businesses want to work with these customers, the enterprises have to link with the shipping lines or become subcontractors for 3PL suppliers.

In terms of inland sea and river transport, these two types of transport could become a potential benefit of the internal logistics enterprises; especially Vietnam has the strength of exploiting river and sea routes and becomes a gateway of the ASEAN area.

4.5. Opportunities and challenges of logistics services in Hai Phong in the ASEAN logistics integration

4.5.1. Opportunity for the logistics services development

Firstly, with the integration policies, Vietnam is accelerating the process of logistic integration through reforms of the customs clearance, import-export procedures and tariff reduction in order to boost the consumption process, products, services, trade among countries and in the Asean area. And Hai Phong Port is one of the most important trade areas in the country.

Second, with the geographical advantages, Hai Phong port not only has the potential to trade engagement of the whole country but also has the advantage of connecting domestic trade with Asean region; especially, has the capacity to connect Asean with the southern provinces of China through road, rail, water, and sea routes.

Thirdly, in recent years, FDI inflows into Hai Phong are quite large, so many foreign-invested enterprises are built, which is a source of potential customers for logistic service providers in order to expand customer base and improve delivery service.

4.5.2. Challenges for the logistics services development

Firstly, the infrastructure of Hai Phong Port for logistics operation has many shortcomings. Even Vietnam government continuously spent budget to invest Hai Phong port, it is still lack of synchronism, so cannot operate effectively. The existed issues are as follows:

(1) Container ports are being built, but there is no port to meet the demand and supply of container handling capacity, apart from Lach Huyen international port, which is expected to come into operation at the end of 2017
(2) Overly invested ports lack comprehensive measures, resulting in lower port performance.
(3) The container ports in Hai Phong operate in a fragmented manner leading to inefficient and wasteful investment.

Secondly, the state management of the logistics business is still overlapping, inconsistent and inadequate. In Vietnam today, there is no state management agency in the field of logistics, but there are different agencies that manage different types of logistics services.

Thirdly, the competitive pressure within the logistics industry in Vietnam in general and in Hai Phong, in particular, is quite severe. Internal logistics firms compete with each other on price, while foreign logistics firms compete in the Vietnamese companies by their capacity, prestige, and experience so they occupy potential customers, gaining most of the market share.

Fourthly, there are a few customers using logistic services provided by the domestic enterprises. The narrow customer market, the expansion and the export of logistics are beyond the reach of service providers. The market for logistics services is mainly domestic market with state-owned joint stock companies. These firms often have the strength to provide services such as warehousing, packing, and inland transportation such as railways, riverway, waterway. Thus, target customers are often domestic import-export companies. Few domestic logistics enterprises have become service providers to foreign-owned companies or large manufacturing companies. Because the first concerns of these customers are the full-service providers such as 3PLs and major shipping lines with integrated logistics services. Consequently, local logistics enterprises are becoming subcontractors, or are hiring for shipping lines and 3PL suppliers, but do not have any other benefits other than capital gains for business.

Fifthly, logistics service providers in Hai Phong are small, fragmented and lack of professionalism in the supply chain. They are mainly supplying single logistics services such as customs service, inland transportation service.

- Internal logistics businesses only focus on linking with foreign supply chains, but lack linkage within local service providers. Hence, there is competition but not complement each other.
- Small and medium enterprises providing logistics services in Hai Phong are mainly associated with foreign shipping lines so as to exploit sea transport services. However, their competitive advantage is quite low so they can only coordinate the low value-added services.
- Service providers are not actively working with foreign companies; even they have the ability to provide international sea transport services. As the result, almost all the number of customers are seeking the famous shipping lines, thus, local logistic service providers only bear the coordination of shipping lines.

Sixthly, logistics services in Hai Phong are not diversified:

- Service packages at logistics companies in Hai Phong are not diversified; serving most customers with the same needs, but cannot meet the special needs of customers.
- Integrated logistics and multimodal transport services are very few. If domestic companies want to provide international shipping service, they are required to link with foreign shipping companies.
- Warehouse services have not been diversified to provide services for a wide variety of commodities, especially refrigerated whereas Vietnam has the huge export volume of the frozen commodity. The location of the warehouse is also a problem because it only concentrates on two traditional locations:

near the port and industrial park for export purposes.

5. Conclusion

Logistics services in Hai Phong are not promoting completely its roles as a gateway to the trade-off between Vietnam and other countries so it is still at a low level of development. Therefore, the development of logistics services is an urgent issue for policymakers as well as supplying companies. With the objective of developing logistics services in Hai Phong to meet the requirements of ASEAN logistics integration, the paper has focused on solving the following issues: The factors affecting the development of logistics services, criteria evaluation of the development of logistics services in Hai Phong. Moreover, the paper also analyzed and evaluated the real situation of logistics services in Hai Phong from 2012 up to now in terms of the supply and demand of the logistic market, the current situation of Hai Phong economy, competitive environment and infrastructure. These analyzes and assessments show that although the potential is high, Hai Phong logistics services are still at a low level of development in many aspects, the service activities are small, fragmented and lack of comprehensive measures; thus, logistics system has not promoted its role in the country's socio-economic development.

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Appendix

Gretl model to forecast the growth of total revenue of cargo transport in Hai Phong

The table compiled the total revenue of cargo transportation, GDP and import-export turnover in the period of 2010 and 2016

	GDP	**Ex**	**Im**	**TR**
2010	12.5	10.6	11.5	9.7
2011	7.57	11.7	-13.9	-29.2
2012	10.96	16	17.1	18.3
2013	11.93	16.35	19.38	17.7
2014	8.12	13.4	15.8	5.7
2015	7.15	15.81	15.07	22.26
2016	8.53	18.03	16.35	10.9

Source: Hai Phong Statistics Office

Remark:

GDP: GDP growth rate of Hai Phong

Ex: Export turnover growth rate of Hai Phong

Im: Import turnover growth rate of Hai Phong

TR: Growth rate of total revenue of cargo transported

Econometric panel model

The panel model expresses that the growth of GDP, import-export turnover have influenced the cargo transportation revenue in Hai Phong.

Model 4: OLS. using observations 1905/06/30-1905/07/06 (T = 7)

Dependent variable: TR

HAC standard errors. Bandwidth 1 (Bartlett kernel)

Coefficient	*Std. Error*	*t-ratio*	*p-value*		
Const	-11.8193	19.4464	-0.6078	0.58625	
GDP	0.10528	0.993513	0.1060	0.92230	
Ex	0.17072	0.945364	0.1806	0.86820	
Im	1.39818	0.220348	6.3453	0.00792	***

Mean dependent var	7.908571	S.D. dependent var	17.33926
Sum squared resid	181.7483	S.E. of regression	7.783494
R-squared	0.899247	Adjusted R-squared	0.798494
F(3. 3)	307.1807	P-value(F)	0.000313
Log-likelihood	-21.33106	Akaike criterion	50.66213
Schwarz criterion	50.44577	Hannan-Quinn	47.98797
Rho	-0.653838	Durbin-Watson	3.062981

Test statistic: TR^2 = 7.

with p-value = P(Chi-square(3) > 7) = 47

R-squared shows that 89.9%

The R-squared index indicates that 89.9% fluctuations in total revenue growth (TR1) are explained by GDP growth variable, growth of export turnover variable (Ex) and growth of import turnover variable (Im).

P-value = 0.0718978> 0.05 so the fluctuation of total revenue growth (TR) follows standard distribution.

We have the regression model:

TR = -11.8193 + 0.10528*GDP + 0.17072*Ex + 1.39818*Im

GDP growth forecast of Hai Phong in the next 3 years

$$\delta = \frac{y_n - y_1}{n - 1}$$

If n = 7; GDP_n = 8.53; GDP_1 = 12.5
δ = -0.66
Forecast model:

$$\hat{y}_{n+1} = y_n + \hat{\delta}.l$$ with l = 1, 2, 3…

GDP growth forecast in 2018 (l=2): GDP_{2018} = 8.53 + (- 0.66)*2 = 7.21
GDP growth forecast in 2019 (l=3): GDP_{2019} = 8.53 + (-0.66) * 3 = 6.55
GDP growth forecast in 2020 (l=4): GDP_{2020} = 8.53 + (-0.66) * 4 = 5.89

Export turnover growth forecast in the next 3 years

If n = 7; Ex_n = 18.03; Ex_1 = 10.6
δ = 1.238
Export turnover growth forecast in 2018 (l=2): Ex_{2018} = 18.03 + 1.238*2 = 20.5
Export turnover growth forecast in 2019 (l=3): Ex_{2019} = 18.03 + 1.238*3 = 21.7
Export turnover growth forecast in 2020 (l=4): Ex_{2020} = 18.03 + 1.238*4 = 22.98

Import turnover growth forecast in the next 3 years

If n = 7; Im_n = 16.35; Im_1 = 11.5
δ = 0.8
Import turnover growth forecast in 2018 (l=2): Im_{2018} = 16.35+ 0.8*2 = 17.95
Import turnover growth forecast in 2019 (l=3): Im_{2019} = 16.35+ 0.8*3 = 18.75
Import turnover growth forecast in 2020 (l=4): Im_{2020} = 16.35 + 0.8*4 = 19.55

➔ Due to the panel model, it is forecasted the growth of total revenue of cargo transport in Hai Phong as follows:

Year	**GDP**	**Ex**	**Im**	**TR**
2018	7.21	20.5	17.95	17.53
2019	6.55	21.7	18.75	18.79
2020	5.89	22.98	19.55	20.06