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# A STUDY OF LOGISTICS PERFORMANCE OF MANUFACTURING AND IMPORT- EXPORT FIRMS IN VIETNAM

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**Abstract**

*Logistics performance assessment is a critical issue when trying to improve logistics. This is particularly true in developing countries where no baseline survey has been done on the subject. This research explored and analysed logistics performance of manufacturing as well as export-import trading firms in Vietnam. The paper developed the framework for the logistics performance assessment based on the tool developed by Banomyong and Supatn (2011). The framework is derived from the 9 key logistics activities proposed by Grant et al (2006). In order to measure firm logistics performance, three performance dimensions are used: cost, time and reliability. A survey was conducted to obtain Vietnamese logistics related data. This is the first research in Vietnam that shows firms' logistics performance through the use of such an assessment framework. The instrument was relatively simple and easy to apply and understand. In addition, based on the research results, the paper provides recommendations and solutions that encompass a series of policies to effectively*

**Keywords:** logistics cost, logistics performance, cost, time, reliability, manufacturing and import-export firms, Vietnam.

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## 1. Introduction

Over the past 20years, Vietnam has achieved a sustained economic growth. According to the World Bank (WB), one of the most important factors to maintain that achievement was the labour migration trend from rural area to urban area, causing a decline labour market shortage and leading to improvement of productivity as a priority in the next phase of Vietnam's economic development. Vietnam has benefited from favourable geographical location, political stability as well as impressive investment in infrastructures, which are the key conditions for the rapid development of industry, an increase in trade and stronger global connectivity. However, the WB also indicated that Vietnam's key challenge is to

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sustain economic growth through within-sector productivity improvements. Better performing logistics can play a significant role in increasing productivity, as well as provide international and domestic investors with an environment where they can source products for export at a lower total landed cost than what they incur in other countries.

However national logistics cost in Vietnam lies in the range of 20.9 to 25% of GDP (Blancas et al., 2014), 10% higher than the average for developing countries in the region. In addition, logistics services in Vietnam are not only costly but also less effective. In 2012, the inventory costs nationwide due to delays in customs procedures amounted to US$100 million and have been estimated to go up to US$121 million in 2015 and US$182 million in 2020. The problem with these numbers is that they are national estimates and does not reflect the actual situation at sector or firm level.

Logistics performance assessment is a critical issue when trying to improve logistics. This is particularly true in developing countries where no baseline survey has been done on the subject. The purpose of this research is to explore and analyse logistics performance of manufacturing as well as export-import trading firms in Vietnam. This will enable the country to have an initial logistics performance baseline.

This paper is structured into four sections. First, an overview of development of manufacturing and export- import enterprises in Vietnam is presented. The literature review on logistics performance and determinants affect logistics cost of firms is then discussed. In the third part, the methodology section explains the data collection and the framework for logistics performance assessment. Finally, the findings from the study is further presented and explained. The recommendations regarding a set of measures for promoting logistics performance of Vietnamese firms are then derived.

## 2. Overview of manufacturing and export-import firms in Vietnam

Vietnam's manufacturing and export-importsector grew at a compound annual growth rate (CAGR) of 9.3% from 2005 to 2010, and labor productivity in the sector increased at 3.1% a year. Because this sector accounts for around 30% of overall GDP, this rapid growth made a substantial contribution to Vietnam's expansion during the said period. Within manufacturing, some subsectors performed especially well. Automotive production grew at an annual rate of 16% during these five years, ready-made clothes by 12.9%, and electrical equipment by 12%.

The manufacturing and export-importindustry plays a vital role in Vietnam's economy by providing employment opportunities and accelerating growth. Simultaneously, liberalisation, removal of investment restrictions, and semi-privatization of the economy have greatly boosted the country's industrial growth rate. The main manufacturing and export-import sectors in Vietnam are textiles and garments, food and beverages, leather and wood. The Government has implemented various programs to transform Vietnam's economic structure from agriculture-driven to industry-driven and reduce its import dependency. The development of export processing and industrial zones is just one of the initiatives that bolstered the country's industrial growth.

The Government has also offered incentives to investors in social sectors such as health and education. However, since liberalisation, the Governments share in the overall industrial investment has been declining, thereby enabling higher participation of private and foreign companies.

Overall, with an aim to become industrialized country by 2020, Vietnam's manufacturing and export-importindustry has been undergoing major changes as a result of government initiatives, WTO commitments and industrial liberalization. Industrial development strategy for the period 2011-2020 to focus on the development of textiles, leather, chemicals, agro processing, electronics, automotive, information and communications technologies are expected benefit from the industrial development strategy. Due to improving business climate, increased trade and investment cooperation, low labour cost and Vietnam is expected to emerge as a major manufacturing hub in the ASEAN region. Hence, the vitalization of firms in this industry is very important for the growth of the country. However, there are no data related to their logistics performance and how it can affect their competitiveness.

**3. Literature review**

According to Bagchi, et al., (2000), logistics performance "is the evaluation of the effectiveness of logisticsactivities from the point of view of efficiency (compliance with the consumer requirements), and economical operation (economical nature of the utilisation of resources associated with a given service quality)". The quantification, i.e. measurement of logistics performance is based essentially on financial indicators, and several methods are used for it from activity-based costing (ABC method) through the logistics scoreboard method to the supply chain models. Halley and Guilhon (1997), stated that the logistics performance of manufacturing and trading businesses can be examined from several aspects:

- from the point of view of (external) financial indicators (e.g. transportation costs, stock turnover) it is relatively underdeveloped and reactive,
- from the point of view of organizational indicators, it is a developing activity, through the value-creation indicators it appears as a proactive activity affecting the competencies which extends the control of the owner/manager.

For the sake of the continuous improvement of the logistics processes, Bagchi and Virum (2000) analyzed the logistics performance of Norwegian SMEs, and their main findings were the following:

- The total response cycle time consisting of the time from ordering to acceptance of goods from the supplier, length of time in raw material stock, length of time in production, length of time in finished goods stock, time from customer order to receipt of finished goods and to bill payment ranged from 81-584 days, with high variance within the industry.
- As for the improvement of the logistics management processes, special attention was paid to setting customer service objectives and to organizing the improvement of the logistics processes. Contrary to the researchers' expectations, the fish processing and textile companies managed their logistics well.

- The effect on return on total assets was explained decisively by the reduction of total logistics costs and of time spent on the logistics processes, the organizing for the improvement of logistics processes and the setting goals for customer service.

In 2011, Banomyong and Supatn have developed a tool to assess logistics performance based on the 9 key logistics activities proposed by Grant et al. (2006). The framework includes the following logistics activities:

- Customer service and support,
- Demand forecasting and planning,
- Purchasing and procurement,
- Inventory management,
- Order processing and logistics communications,
- Material handling and packaging,
- Transportation,
- Facilities site selection, warehousing and storage,
- Return goods handling and reverse logistics.

The literature related to logistics performance measurement indicated the following shortcomings:

- Most firms do not comprehensively measure logistics performance,
- Even the best performing firms fail to realize their productivity and service potential available from logistics performance measurement, and
- Logistics competency will increasingly be viewed as acompetitive differential or and a key strategic resource for the firm.

According to the literature, there are three major reasons why firms need to measure their logistics performance. They are to (1) reduce their operating costs, (2) drive their revenue growth, and (3) enhance their shareholder value.

The measurement of operating costs can help to identify whether and where to make operational changes to control expenses and to discover areas for improved asset management. This will enable firms to attract and retain valuable customers with a price/value of products offered can be enhanced through cost reductions and service improvements in logistics activities.

**4. Methodology**

In order to measure firms' logistics performance of enterprises, a framework based on the tool developed by Banomyong and Supatn (2011) is utilised. The framework is derived from the 9 key logistics activities proposed by Grant *et al*. (2006) with three performance dimensions are used: cost, time and reliability.

A five page questionnaire based-survey was made in order to measure logistics performance based on the 9 KPI logisticsassessment framework proposed in Table 1. The questionnaire also assessed firm's characteristics and human resource capability. The participating companies were drawn from textiles, food and beverage, electrical and mechanical engineering, automobile and plastics and chemical industries. They had from 5 to about 500 employees. The annual sales of these companies varied between VND 1-50 billion (US $ 0.05 to 2.5 million). The respondents were managers and/or senior staffs of their firms. These managers/senior staffs generally had over five-year experience in the field and held responsible positions in

**Table 1: KPI Logistics assessment framework**

| Logistics activities | Cost | Time | Reliability |
|---|---|---|---|
| Customer service and support | Ratio of customer service cost per sale | Average order cycle time | Delivery In Full On Time (DIFOT) |
| Purchasing and procurement | Ratio of procurement cost per sale | Average procurement cycle time | Supplier in full and on-time rate |
| Information processing | Ratio of information processing cost per sale | Average order processing cycle time | Order accuracy date |
| Transportation | Ratio of transportation cost per sale | Average delivery cycle time | Delivery In Full On Time (DIFOT) |
| Warehousing and site selection | Ratio of warehousing cost per sale | Average inventory cycle time | Inventory accuracy |
| Demand planning and forecasting | Ratio of forecasting cost per sale | Average forecast period | Forecast Accuracy date |
| Inventory management | Ratio of inventory carrying cost per sale | Average inventory day | Inventory out of stock rate |
| Material handling and packaging | Ratio of value damaged per sale | Average material handling and packaging | Damage rate |
| Reversed logistics | Ratio of returned goods value per sale | Average cycle time for customer return | Rate of returns goods |

*Source:* Banomyong, R. and Supatn, N. (2011) - Developing a supply chain performance tool for SMEs in Thailand, Supply chain management: an international journal, volume 16, 2011, p.20-31

their organizations. Thus, their responses can be taken as representative of their firms.

53 of the companies are located in the North, 24 in the Middle and 82 in the South of Vietnam. Most of the manufacturing companies are export-oriented and have large share of exports. All data was sent back to the researchers via fax, email, postal, and even face to face interview. The participating companies commented that they had several difficulties in understanding the data requirement in the questionnaire. Furthermore, many did not have the required data available, in particular cost related data for all logistics activities.

This fact indicated that the knowledge related to logistics of Vietnamese companies is limited and that many respondents did not have an adequate understanding of logistics activities, logistics cost as well as the importance of assessing the performance of their logistics. Even though the objective of the survey was clear to the researchers there was a gap in the understanding of the respondents. In case of lack of data or understanding, the respondents could contact the research team based in Vietnam for more explanation.

### 5. Findings & Recommendations

The survey asked respondents to initially state the rationale behind the estimated high cost of logistics in Vietnam. It is interesting

to note that in Vietnam the understanding of logistics cost is focused very much on transportation issues. The majority of respondents also struggle to understand the importance of logistics cost as illustrated in Table 2. Nonetheless over half also highlighted the lack of transparency in the supply chain as a contributing factor to high logistics cost.

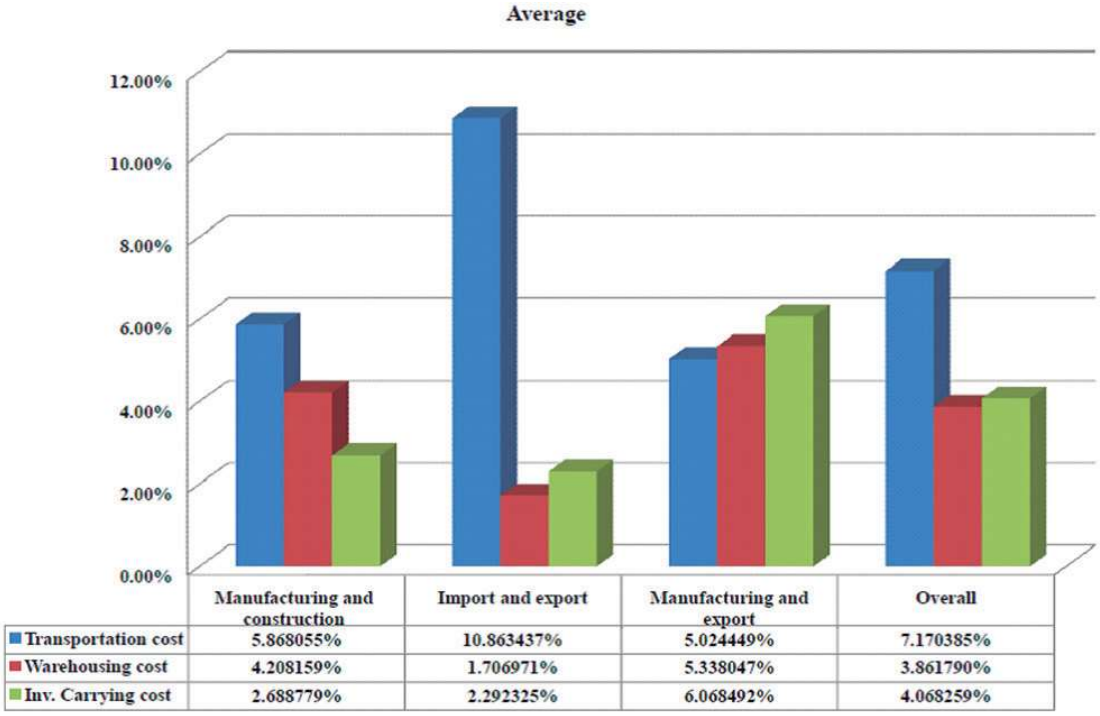
The importance of transport cost is not surprising as this cost dimension has the highest logistics cost ratio with a cost range from 5.02% to 10.86% per sales, depending on different types of enterprises. Inventory carrying cost is at the second important cost dimension in companies' logistics operation cost. It varies from 2.28% to 6.08% per sales with an average of 4.06%. Warehousing cost accounted for 2.86% per sales by average

**Table 2: Reason for high logistics cost in Vietnamese firms**

| Reasons | Percentage (%) |
|---|---|
| Unawareness of logistics costs significance | 63.5 |
| Lack of transparency in supply chain | 54.08 |
| Inadequate management of distribution channel and warehouses | 49.05 |
| Poor and insufficient infrastructure | 44.02 |
| Unavailability of competent staff and professionals | 38.36 |

*Source: The survey done by project team in Vietnam*

**Figure 1: Average respondents' logistics costs**



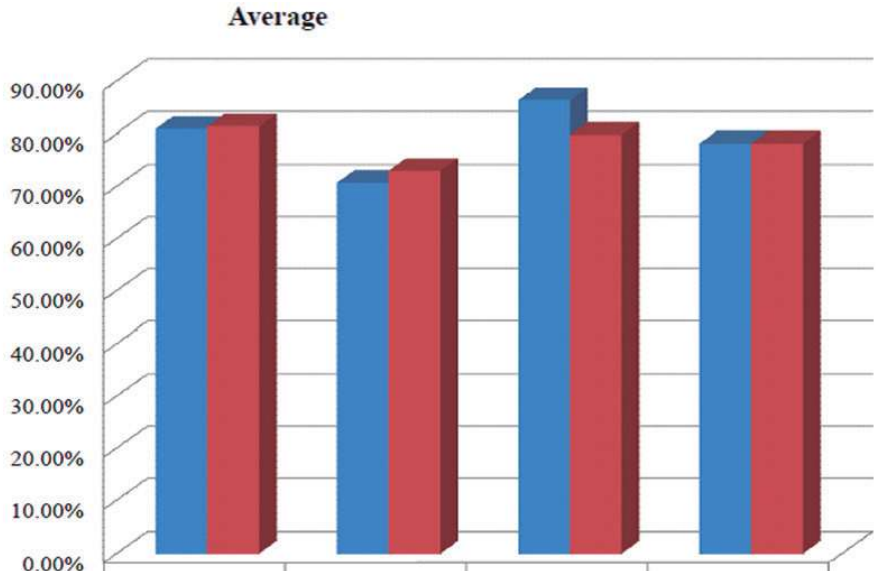

*Source: the authors*

with a range from 1.71% to 5.33%. Figure 1 graphically provides information related to respondents' logistics costs.

With regards to overall logistics performance, most of the respondents' realised the importance of logistics in their operation. However, many of them are not aware of the role of logistics as a key source of competitive advantage and/or a top management priority in their activities. Logistics is one of the important factors that have major impact in their profitability as well as customer service level.

This issue is reflected in Figure 2. Figure 2 reflects the capability of respondents when delivering goods to their respective customers as well as how accurate is their forecast. The delivery in full and on time (DIFOT) capability is very important when trying to understand logistics performance and answering customer service level. When compared with international standards, the DIFOT capability of Vietnamese firms is quite low. The answer may be found in Table 1 which highlights numerous reasons behind not only high logistics cost but also limited

**Figure 2: Respondents' DIFOT and forecast accuracy**




| | Manufacturing and construction | Import and export | Manufacturing and export | Overall |
|---|---|---|---|---|
| Transportation Delivery In-Full and On-Time Rate | 80.83% | 70.68% | 86.29% | 78.17% |
| Forecast Accuracy Rate | 81.29% | 73.00% | 79.71% | 78.14% |

*Source: the authors*

logistics performance. Lack of logistics related infrastructure, know-how and regulatory transparency negatively impacts firms' logistics performance which in turns increase their logistics cost.

The result also showed the external operational conditions that firms face in its domestic locations in terms of general business perspective, availability of production and business facilities, logistics efficiency, transport infrastructure, and location of competitors can have impact on their logistics performance. Based on the result and analysis, some recommendations

could be made in order to improve the logistics performance of manufacturing and export- import firms in Vietnam.

Firstly, there is an urgent need to develop and increase the awareness related to the role of logistics and logistics cost in firms' operation. It is also necessary to encourage manufacturing and export-import enterprises to raise the efficiency on logistics management by reducing non-value-added activities.

Secondly, continuous investments in logistics infrastructure need to be conducted from a macro perspective in order to create an enabling environment for improved logistics. However, the investment should not only be limited to transportation infrastructure but also in other dimensions such as the institutional framework and the promotion of logistics service standards that could be offered by local logistics service providers.

Thirdly, considering from the Vietnam's logistics industry perspective in general and manufacturing and export-import firms in particular, priorities should be given to investment in human resources development in terms of providing necessary skills for all levels of authorities and enterprises.

Finally, since logistics is a crucial part of supply chain management (SCM), there is a need to develop and implement total supply chain management for those firms, leading to benefits for entrepreneurs in increasing the efficiency of production, planning, monitoring and evaluation. It also benefits to government sector in order to support the manufacturing and trading industry growth, helping them to efficiently face with changes in domestic and global market.

Even though the above recommendations have been proposed, it still need more examination before they can be of any practical value.Limitation of this research is related to the completeness of the required assessment data. The availability of data is a reflection of systematic data collection and storage procedures of the respondents' firms. This is something that is still lacking very much in Vietnam. The inadequate understandings related to logistics have made respondents confused when trying to answer the questionnaire. Thus, further studies should pay special attention on how to measure the logistics performance and define logistics cost of other types of firms.

## 6. Conclusions

The purpose of this paper was to explore some of the issues related to firms' logistics cost and performance in Vietnam. It was interesting to observe that respondents had difficulties in answering the survey questions and this could be interpreted as a lack of understanding related to logistics concepts. Maybe the challenge was also in the fact the questionnaire was translated into Vietnamese and logistics technical terms do not translate well.

The initial results from the survey also seem to concur with this interpretation as according to respondents' the concept of logistics cost is not well understood. The obtained logistics cost are consistent with other countries in terms of their composition with transport cost having the highest ratio but sector to sector comparison need to be done between countries in order to reflect adequately if firm's logistics cost in Vietnam are really that high.

Service level capability seems to be the most worrying issue with lower levels of performance when compared with neighbouring countries like Thailand. This

is an area that has to be addressed quickly if Vietnam wants to maintain its growth momentum. Having lower labour, production or even logistics cost in itself is not sufficient to sustain an economy. Reliability is a key construct for logistics performance and there is an inverse relationship between logistics service quality level and logistics cost. The initial results of this survey do seem to point to that direction.

Further analysis is needed to understand the survey results. However these initial results does provide insight into the logistics cost and performance of Vietnamese firms. This is only the starting point in developing a base line of Vietnamese firms' logistics cost and performance database that could be further developed into a policy advisory tool to improve logistics in Vietnam.

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