

The Performance of Logistics Sector in Vietnam During Covid.19

Oanh Thi Hoang Nguyen

Industrial Economic Department, Thainguyen University of Technology, Vietnam

Abstract: Vietnam's logistics industry has proven its role is increasing over time, with an increasing number of businesses, labor and capital. The outbreak of Covid.19 has caused the logistics industry to have an extremely difficult year, with efficiency indicators plummeting. However, the industry shows a miraculous resilience, outperforming other service industries. The pre-tax profit recovery was more than 23 times higher than the previous year thanks to the application of technology, high levels of long-term investment capital and equipping long-term assets with good labor. However, analysis also shows that the logistics industry still has limitations in terms of cost savings and labor efficiency. Too high a proportion of costs and low labor efficiency are factors affecting the industry's ability to recover after the pandemic.

Keywords: Covid.19, Logistics sector, quality, performance.

I. INTRODUCTION

The logistics industry plays an important role in the economy. Especially in highly open economies, logistics is considered a lifeblood that helps international trade develop, thereby helping economic growth and poverty reduction.

In Vietnam, logistics services have achieved a relatively high growth rate, 12 - 14%, contributing about 4 - 5% of GDP, of which the proportion of businesses outsourcing logistics services is about 60 - 70%. The logistics industry has contributed to providing jobs for many workers in recent times, accounting for about 13% of the total number of workers in the service industry.

In 2019, Covid.19 was discovered in China and then quickly spread globally. The impact of Covid.19 is unprecedented in history. It not only affects economic activities, but also greatly affects human health. There is no precedent for the whole world closing borders, social distancing, and people being restricted from traveling for a relatively long period of time. The implementation of social distancing has caused social and economic activities to stagnate, in which the service industry is the most seriously affected industry and the logistics service industry has also gone through extremely difficult periods

The impact of Covid.19 on the service industry in general and the logistics industry in particular is mentioned in many studies. For example, Mishra and Rampal (2020) find out the Covid.19 impacting on the medical, tourism industry impacted by Covid.19 is a research of Vidya and Prabheesh (2020). Liu, et al. (2020) analyze the effect of Covid.19 on the Chinese logistics industry and find that Covid.19 cause to change the service pattern, disrupt the logistic network, drop in demand, increase the number of firms, and reduce the transport capacity. Perkumiene et al. (2021) find both the negative and positive impacts of Covid.19 on logistics and transportation sector. Li et al. (2023) review 85 papers which analyze the impact of Covid.19 on five fields of logistics: life, e-commerce, healthcare, air transportation, and emergency; systematically composes and give the value recommends to reduce or get rid of the negative impact of COVID-19 on logistics sector.

In Vietnam, seminars and workshops are held to discuss the impact of Covid.19 on the logistics industry. Bui and Nghiem (2022) analysis the roles of logistics sector in Vietnam and recommend some solutions to further perfect the state management apparatus of logistics services. Do et al. (2021) find out the smaller firms the more severe impacted by Covid.19, logistics firms do not prepare well to face with the crisis. Whitehead (2020) suggests the challenges of the logistics sector in Covid.19 context. Nguyen (2020) recognizes both positive and negative effects that are caused by Covid.19. Beside the negative impact, Covid.19 causes to promote the change in and applying the technology in the logistics sector which makes it easier to adjust and adapt with new conditions. Tuy nhiên những nghiên cứu này không đưa ra những số liệu chứng minh cụ thể về sự tác động của Covid.19 đối với ngành logistics. Nghiên cứu này sử dụng số liệu của ngành logistics được xuất bản trong cuốn Sách trắng kinh doanh Việt Nam. Cuốn sách này được xuất bản lần đầu vào năm 2019 và hiện tại đã xuất bản được 5 ấn phẩm (từ 2019 đến 2023). Cuốn sách này cung cấp số liệu về doanh nghiệp Việt một cách có hệ thống, chi tiết. Sách Trắng doanh nghiệp cung cấp ra ba chỉ số quan trọng là số lượng, tốc độ phát triển và chất lượng DN của từng địa phương.

However, these studies do not provide specific data proving the impact of Covid.19 on the logistics industry. This study uses data from the logistics industry published in the White Books on Vietnamese Business.

This book was first published in 2019 and has currently published 5 editions (from 2019 to 2023). These books provide data on Vietnamese businesses in a systematic and detailed manner with three important aspects: quantity, growth rate and quality of businesses.

Research results show that the service industry in general and logistics in particular are seriously affected by the Covid pandemic. Year 2020 is the year when most service industries have negative growth rates. Although Logistics has a positive net revenue growth rate, pre-tax profit decreased by 94% compared to 2019, only VND 1,774 billion. That's why other efficiency measures such as ROA, ROE and ROS of the industry in 2020 are also almost zero. However, logistics is one of the most impressive recovery industries in 2021. In 2021, profit before tax increased 23 times compared to 2020, the industry with the second highest increase among 12 service industries. Therefore, other efficiency measurement indicators also increased correspondingly. However, many indicators of resources and efficiency of the logistics industry are lower than the general average. A part of the reason is because among the 12 service industries, banking and finance, insurance; wholesale and retail, repairing cars, motorbikes, motorbikes and other motor vehicles are two big capital sectors, but Vietnam's logistics industry itself is not really efficient, operating costs are still large, labor efficiency is low, which makes it decline the performance .

The rest of the paper is constructed as followings: Part 2 is the openness index of Vietnamese economy; Part 3 is the logistics performance index of Vietnam during 2016-2021 (LPI); Part 4 evaluate the efficiency of the logistics sector under the Covid.10; and the last part is conclusions.

II. OPENNESS INDEX OF VIETNAM'S ECONOMY

Vietnam's economy after more than 30 years of innovation (since 1986) has achieved many successes; the average growth rate is quite high, people's lives are increasingly improved, economic indicators are improved, economic liberalization - economic integration is increasingly promoted. One of the remarkable successes in recent times is that Vietnam has transformed from a net importer to a net exporter, deeply integrating with the world economy. The level of integration of the economy is expressed through the openness of the economy. The openness of an economy is often measured by calculating the proportion of exports and imports in the country's gross domestic product (GDP). The openness of Vietnam's economy since 2005 has increased continuously, from 120.1 to 178.7% in 2005 and 2022, respectively. The balance of payments improves over time. The high openness of the economy will have an impact on the logistics industry, promoting logistics development to match that openness, and vice versa, developed logistics will support the economy, especially international trade. Details of the openness of the economy of Vietnam are provided in Figure 1.

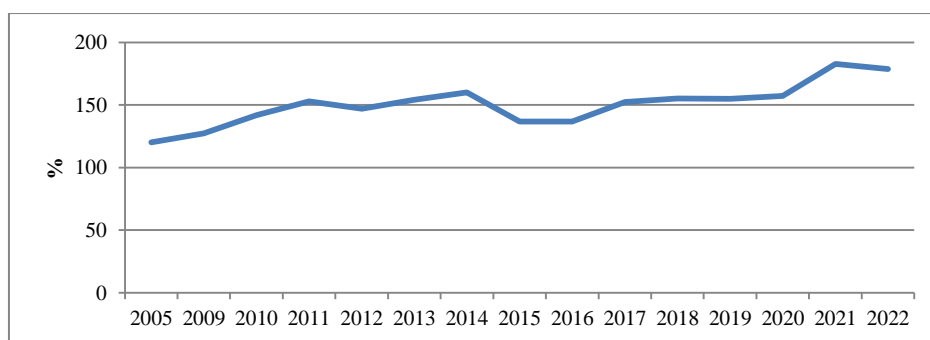


Figure 1. The openness index of Vietnam during 2005-2022

III. LOGISTICS PERFORMANCE INDEX

To generally evaluate the efficiency and logistics capacity of countries, the World Bank uses the logistics performance index (LPI). This index is published every two years. However, during the covid.19 period, LPI from 2019 to 2021 was not announced by the World Bank.

This index is calculated based on the component scores of the sub-indices. There are 6 sub-indices in the LPI calculation formula including: Customs clearance, infrastructure, international transportation, capacity of logistics services, track and trace consignments, and delivery time. The scores of the sub-indices are obtained through a survey with levels of options for each question ranging from very high (5 points) to very low (1 point). The LPI score is based on the weighted average of the component scores, in which the weight of logistics service capacity is the highest (0.4166), then the infrastructure component (0.4130). The lowest is deliveries (0.3961).

Vietnam's LPI score gradually increased over time, however in 2016 Vietnam's score decreased, causing Vietnam to drop 16 places on the rankings compared to 2014. Up to 5/6 component scores decreased compared to 2014. In 2022, Vietnam will once again drop in the rankings compared to 2018, from 39th to 43rd.

However, Vietnam's LPI score was still higher in 2022. Compared to 2018 (3.27 compared to 3.30), 4/6 component points increased and 2/6 component points decreased. Thus, with the LPI score of 2022 compared to 2018, the logistics performance of Vietnam was still improving compared to the previous year but the level of improvement was slower than other countries.

When taking into account the scores of the components of the LPI, it can be seen that the scores of 6 components over the years were mainly at or above three. There was no year with a component index of 4, only 2018, the time point reached 3.67. Thus, all of Vietnam's component scores are only of average quality. In particular, the lowest index belongs to the customs clearance and infrastructure index. Infrastructure is the index with the second highest weight in calculating the total LPI score. International transportation and delivery time are the two components with the lowest weight, but their scores were higher than the remaining components. That's why Vietnam's LPI is pulled down more.

Vietnam's infrastructure started from a very low base, only reaching 2.5 points in 2007, while other components scored quite high, especially the delivery time component (reaching 3.22 points in 2007). However, by 2022, infrastructure has surpassed and is as high as logistics service capacity. The increase in infrastructure score is 0.7 points, while delivery time is only 0.18 or international transportation is 0.3, capacity is 0.4. International transportation and delivery is the component index with the lowest growth rate among the 6 components of the LPI.

Table 1. Vietnam's LPI ranking over the years

Year	Rank	LPI score	Custom	Infrastructure	International shipments	Logistics competence	Tracking and tracing	Timeliness
2007	53	2.89	2.89	2.50	3.00	2.80	2.90	3.22
2010	53	2.96	2.68	2.56	3.04	2.89	3.10	3.44
2012	53	3.00	2.65	2.68	3.14	2.68	3.16	3.64
2014	48	3.15	2.81	3.11	3.22	3.09	3.19	3.49
2016	64	2.98	2.75	2.70	3.12	2.88	2.84	3.50
2018	39	3.27	2.95	3.01	3.16	3.40	3.45	3.67
2022	43	3.30	3.1	3.2	3.3	3.2	3.3	3.4

Source: Ministry of Industry and Trade of the Socialist Republic of Vietnam

IV. THE PERFORMANCE OF THE LOGISTICS SECTOR DURING COVID.19

4.1. Data

Data used in this article are collected from the White Books on Vietnamese Business. The book was first published by the General Statistics Office of Vietnam in 2019. This book includes indicators to evaluate production and business activities of the entire economy, industry and each province. This is the most complete and detailed set of data on business performance, including indicators of quantity, growth rate and quality. Previously, data on the performance of Vietnamese enterprises was published only at the general level of the whole country, not detailed for each province or sector, and was published in many different reports and documents. This set of data has provided a true, comprehensive, complete and official picture of the business development situation for policymakers, managers, and researchers at home and abroad to refer to.

4.2. General assessment of the operational situation of the logistics sector

The logistics sector is currently a relatively developed industry in Vietnam, the number of newly established businesses and businesses operating in this field are increasing. From 2016 to 2021, the number of businesses operating in this field increased 1.33 times, an average annual increase of 5.52%. The number of workers attracted to this industry is also increasing. From 2016 to 2021, the number of labor increased 1.08 times, from 630,380 people in 2016 to 685,283 people in 2021, accounting for about 13% of the total number of workers in the service industry. The average income per worker in the logistics sector has also increased steadily over the years, but it is lower than the industry average. The average income per worker in the logistics industry ranks behind six other service industries. In particular, the labor efficiency of the industry is relatively low.

Although there was improvement during this period, it was relatively much lower than the general average, only a half or 70% of the industry average. During the Covid.19 outbreak, the service industry in general and logistics in particular witnessed a decrease in the total number of workers working in the industry, although the number of operating businesses still increased. However, the reduction in labor due to Covid.19 in the logistics industry is lower than the average, the corresponding with 1.51% and 2.94%. However, the average income level as well as labor efficiency of the industry not only did not decrease but increased during the Covid.19 period. That shows that the logistics industry adapted relatively quickly to the Covid.19 shock and quickly made adjustments to suit new conditions. More details about the general development of logistics during 2016-2021 are provided in Figure 2.

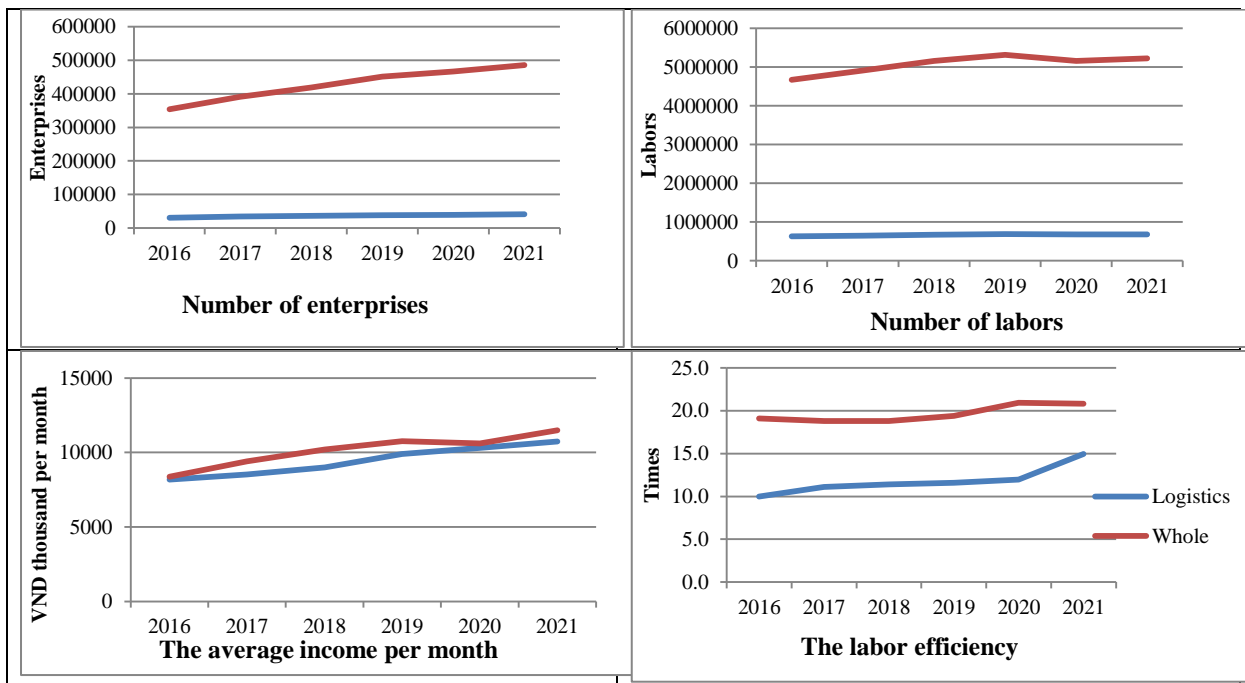


Figure 2. The general development of logistics during 2016-2021

4.3. Resources for developing the logistics sector during 2016-2021

Resources for developing the logistics industry are evaluated based on a number of criteria such as capital, owner's equity, fixed assets and long-term investment, capital per employee and fixed assets per employee.

Total capital for the logistics industry accounts for about 4.5% of the total capital for the service industry, in 2020 alone the amount of capital for logistics decreased to 4%. The annual capital growth rate of logistics goods from 2016 to 2021 was 13.5%, while the entire service industry was 14.7%, of which in 2020 the capital growth rate of the logistics industry was the lowest, about 7.5%. However, over the entire period, the amount of capital devoted to the development of logistics in particular and the whole service industry in general increased.

The owner's equity ratio of the logistics industry was relatively higher than the entire, about 1.3 to 1.6 times higher. Especially in 2020, when the entire service sector was somewhat short compared to other industries, the logistics' owner's equity was the highest in the period 2016 - 2021. This shows that when other services were facing difficulties in mobilizing capital by themselves, the logistics industry were better able to mobilize its own capital than other industries. Thanks to the better ability to mobilize equity capital, the industry reduced dependence on external capital, creating motivation for long-term development. That was shown through two indicators: fixed assets and long-term investment and fixed assets and long-term investment per employee. Fixed assets and long-term investments of the logistics industry nearly doubled from 2016 to 2021, from VND 487,347 billion to 794,772 billion, corresponding to an average increase of 8.4%, while the entire increase was only about 3.2%. The proportion of fixed assets and long-term investments of the logistics industry in the total service industry was increasing, from 6.64% to 9.34%.

Thanks to the amount of long-term investment capital in the years before Covid.19 being much higher than the general average, the logistics industry quickly overcame the crisis caused by the epidemic. In particular, the amount of long-term assets per capita of the logistics industry was much higher than the entire service industry, nearly 2 times higher and tends to expand more and more, from 1.89 in 2016, in 2021 this ratio will

increase 2.04 times. Even though covid.19 happened, long-term assets per employee still increased compared to the previous year. However, the average capital per employee of the logistics industry was much smaller than the average level of the entire industry. The average capital of the entire service industry was 3 times higher than the average capital of the logistics industry. This shows that other service industries invest more in short-term capital per employee than the logistics industry. This result is partly due to the fact that other service industries are inherently older than the logistics industry and fixed capital does not need to be as large as the logistics industry, especially infrastructure capital for the logistics industry accounts for a relatively large proportion in the total capital of the logistics industry.

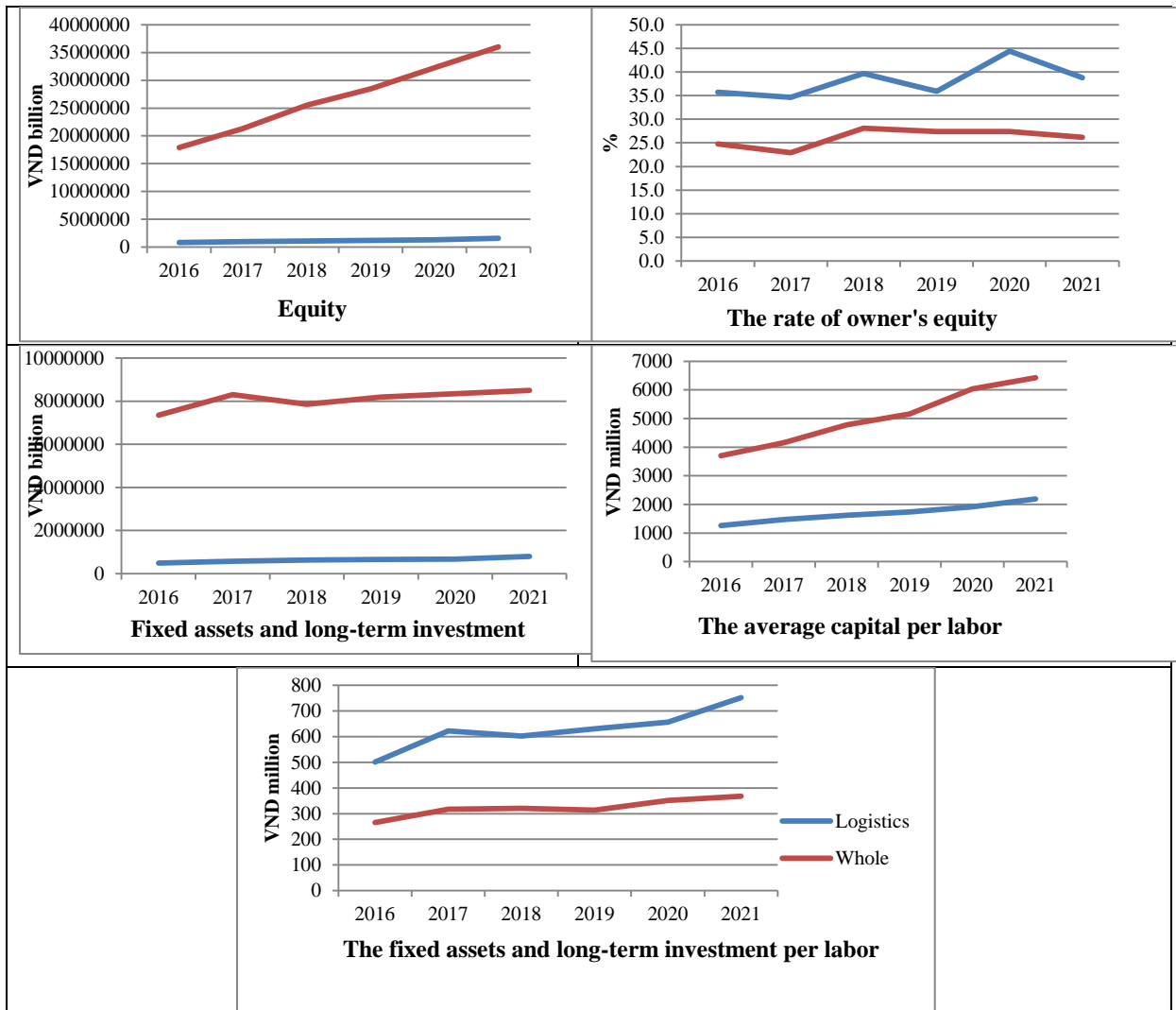


Figure 3. The resources to develop the logistics sector during 2016-2021

4.4. The performance of logistics sector during Covid.19

The performance of Vietnam's logistics industry during the Covid.19 epidemic period is evaluated through a number of basic indicators including net revenue, profit before tax (EBT), and ratio of pre-tax profit to net revenue (ROS), pre-tax profit to total assets (ROA), and pre-tax profit to total equity (ROE). These ratios will be calculated according to the following formulas:

$$\text{Return on Sales (ROS)} = \text{EBT} / \text{Net Revenue}$$

$$\text{Return on total assets (ROA)} = \text{EBT} / \text{Average total assets}$$

$$\text{Return on equity (ROE)} = \text{EBT} / \text{Average total equity}$$

Based on data from the White books on Vietnamese business, the performance of the logistics industry from 2016 to 2021 is provided in Figure 4.

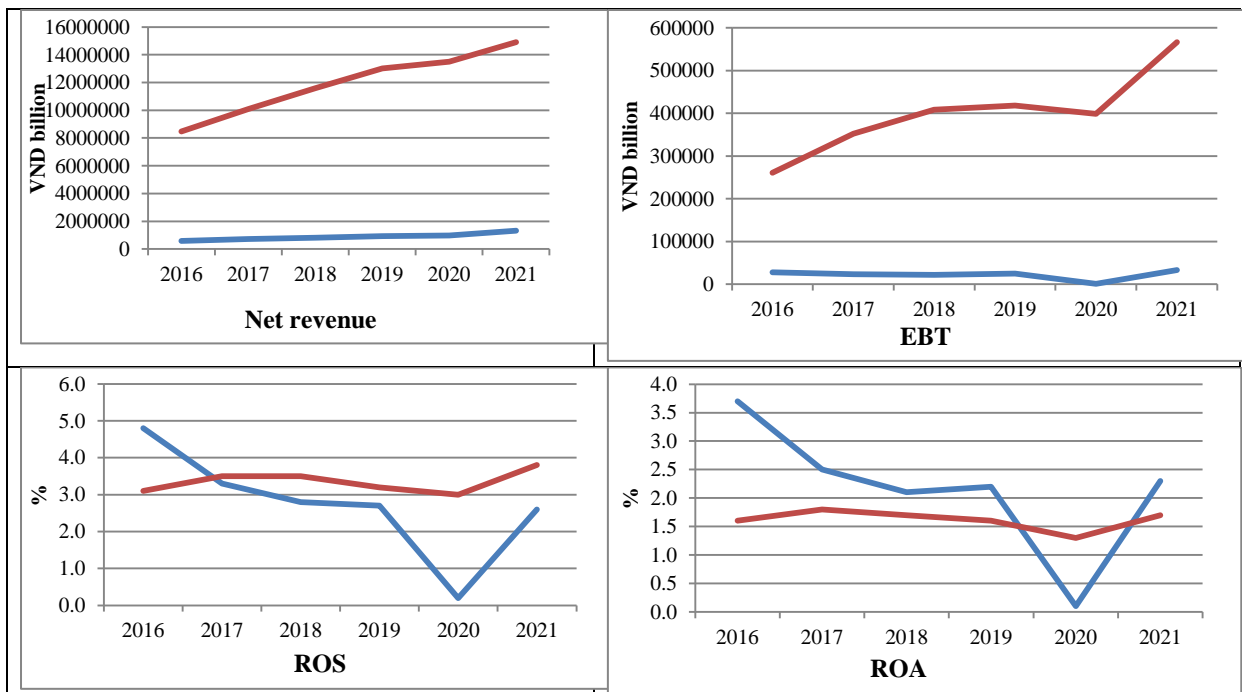
Through Figure 4, the net revenue of the logistics industry increased from 2016 to 2021. Although the Covid.19 epidemic raged and all industries were seriously affected, the net revenue of the logistics still

increased. In 2019, it increased by 13.8% compared to 2018, and in 2020 it increased by 5.9% compared to 2019. Especially in 2021, it increased by 34.3% compared to 2020. While the entire service average in net revenue growth in 2020 and 2021 increased 3.7% and 10.6%, respectively. In terms of net revenue, the logistics industry ranks the third out of 12 service industries. However, in terms of pre-tax profit, in 2020 and 2021 the logistics industry ranked the seventh and the fourth out of 12 service industries. Thus, it can be said that the cost of the logistics industry was relatively high compared to some other industries. Especially in 2020, when the Covid.19 epidemic began to develop strongly around the world and in Vietnam, the pre-tax profit of the logistics industry decreased vertically. From VND 25,422 billion in 2019, the industry's pre-tax profit decreased to VND 1,447 billion in 2020, corresponding to a decrease of 94.3%, while the industry's overall decrease was only 4.7%. However, while five other service industries had negative pre-tax profits, the logistics industry still maintains positive profits.

Year 2021 witnessed a strong recovery of the logistics sector, which was the sector with the strongest recovery and far surpasses other service industries. Pre-tax profit increased 23.3 times compared to 2020, equivalent to an increase of 2225.5%, while the industry's overall increase was 43%. In 2021, the transportation of goods increased sharply due to the demand for medical supplies from countries around the world. Vietnam's import and export volume in 2021 also increased significantly compared to 2020. At the same time, due to the requirements on social distancing created opportunities for the logistics industry to increase the application of advanced scientific and technical measures at a faster speed and wider scope. That created the outstanding development of the logistics industry during the Covid.19 period.

Corresponding to the fluctuations in the indicators of net revenue and pre-tax income of the logistics industry, the other indicators (ROS, ROA and ROE) also fluctuated. In 2020, all three of these indicators had very small values although still maintaining a level greater than 0, much lower than the average level of the entire service industry. In 2020, ROS and ROE indicators were not only lower than the general average but also in the period from 2016 to 2021 (except 2016). This once again proves that the industry's costs are relatively large compared to the entire average. Although 2021 witnessed outstanding growth in pre-tax profit as well as net revenue, the industry's ROS was still smaller than the general average (2.8% and 3.8%).

While ROS and ROE were lower than the average level of the entire industry in most years, ROA was the opposite, only in 2020 it was lower, the remaining years were all higher than the average level. When analyzing ROA by segmenting into ROS and net revenue to asset ratio, it can be seen that the net revenue to asset ratio needed to increase to ensure that ROS was smaller than the entire average. The ratio of net revenue to assets increased compared to the industry average, which means the operating efficiency of assets increased, however, due to high industry costs, other indicators were reduced below the average of the whole.



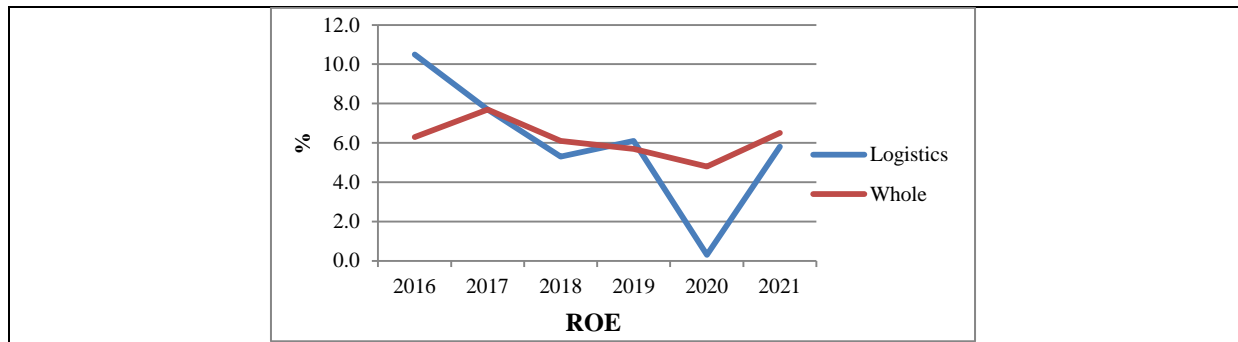


Figure 4. The performance of logistic service in Vietnam during Covid.19

V. CONCLUSIONS

The logistics industry shows its role in the economic sector, contributing significantly to the overall development of the economy, creating jobs for many workers. The number of businesses operating in the logistics field is constantly increasing. The average capital per enterprise also increases over time, meaning the scale of operations of enterprises is increasing. However, when considering income and labor efficiency, the logistics industry is somewhat lacking compared to other industries, lower than the general average, especially labor efficiency.

With capital increasing rapidly in the recent period, especially long-term investment capital much higher than the general average, it promises outstanding development of the logistics industry in the coming period. However, a basic problem for the logistics industry is the need to reduce the proportion of costs in total revenue. The efficiency indicators of the logistics industry will be significantly improved if costs are reduced.

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