



International Journal of Multidisciplinary Research and Growth Evaluation



International Journal of Multidisciplinary Research and Growth Evaluation

ISSN: 2582-7138

Received: 27-06-2021; Accepted: 18-07-2021

www.allmultidisciplinaryjournal.com

Volume 2; Issue 4; July-August 2021; Page No. 535-542

How is transportation logistics performance impacted by RT, IWT, ST, Labor, Capital under a perspective of economics: The case of Hochiminh, Vietnam

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Abstract

The paper focuses on assessing of transportation logistics (TL) consists of three its sub-sectors are Road transportation (RT), Inland Water Transportation (IWT) and Sea Transportation (ST). The approaches of author are to use the Cobb-Douglas production function (Cobb-Douglas) to assess the dependence of TL's productivity on the using of input which are labour and capital, applying multivariate linear regression function to analyse the influence of GDP growth monthly of RT, IWT, and ST on TL's GDP growth monthly, and analytical - statistical methods to measure six indicators are number profitable / losses Transportation Enterprises

(TEs), total income/ person/year, % of return on sales (ROS), % of return on equity (ROE), and % of return on assets (ROA). The findings are (1) the marginal productivity of TL increases gradually according to input's scale, (2) GDP growth monthly of TL depends on RT, IWT, and ST's GDP growth monthly, (3) number of losses TEs is 46% - 54% (5,229 - 14,766 units) which is higher than number of profitable TEs as 38% - 42% (4,505 - 11,067 units), (4) % of ROS, % of ROA, and % of ROE are too low roughly 2.7% - 11.2%, (5) total income/ person/ year is actually too small approximately 4,256USD in 2016 to 5,577USD in 2018.

Keywords: Transportation, Logistics, Road transportation, Inland Way Transportation, Sea Transportation

1. Introduction

Logistics transportation systems have developed and experienced in many ways over time. The evolution along with a history of transportation system. Because of the case for any system, because it grows so makes its impact on societies and day to day life. The increased growth of usage of the transportation systems across all modes can change to be better suited for each society and that time period in which it is needed. There are not the same types of transportation systems concur with cost and effectiveness, the logistics of a transportation system must be considered thoroughly in order to fully comprehend its effectivity and quality to meet the requirements of a society (MD Sarder, 2020). In the presence of large disparities in economic development, the flow of products, the demand for transportation logistics is likely to be significantly larger in one direction than in the other. Thus, the transportation that delivers goods from a departure point to a destination will have significantly lower utilization rates on the return leg, resulting in higher transportation costs for the outward movement (Bertha Maya Sopha, *et al*, 2020) ^[19]. Transportation logistics is a vital part of how logistics and supply chain organizations decrease costs and improve service (MD Sarder, 2020). The fact that transport costs significantly contributes to total logistics costs, building both an effective delivery network and multimodal transportation is very important to reduce logistics costs (Bertha Maya Sopha, *et al*, 2020). Road transportation by vehicles like truck is a leading way of transporting modes to move goods all around the world (Bartosz Sawika, Javier Faulinb, Elena Pérez-Bernabeu 2017). An energy intensive forms of transportation play major role in almost developing countries that their primary developmental goal is to create economic opportunities to make economy grown, and in order to drive economic development, they are still heavily reliant on (Chao Wanga, Yuelin Zhaob, Yongjie Wangb, *el al.*, 2020). Transportation logistics plays a role in the various sectors of an economic nation like the extractive industry, manufacturing sector, it then processes these raw materials into finished goods. Finished products or services are then exported to other parts of the world where such resources are unavailable to produce the finished products and services required by their own population. This then accounts to the Gross Domestic Product of an economy. Because of businesses strive to be competitive, transportation logistics industry again plays a critical role in the entire supply chain and the pricing of goods and services hence make the most important contribution to the business or industry (MD Sarder, 2020). The main challenges the automotive manufacturers faces which depends on how they manage and operate their transportation logistics systems (Musarrat Jehan, 2020). Transportation logistics can be classified into five main modes, they are Road Transportation, Inland waterway transportation,

Maritime Transportation, Air Transportation, Rail Transportation, and Pipeline Transportation (Doan Thi Hong Van, 2010).

Hochiminh City (HCMC) transportation logistics has quite small number of TEs compared with other services industries in 2017, it however has the second largest GDP as 7.35% of total GDP of nine service industries. Infrastructure structure of HCMC has developed fast that promotes transportation logistics to be grown fast according too. Although infrastructure structure of RT, TWT, and ST are being improved continuously by new building, extending, but it has not resolved traffic jam yet like slow deliveries, and troubles of deliveries delay. HCMC seas ports are losing the unique position, the delay of link between major routes and the roads which connect to bridges and ports that makes the transportation timelines to be delayed, then leading to logistics cost is difficult to reduce (HCMC Statistics Department, 2018).

From results of my previous paper named Discussing Competitiveness of Vietnam Logistics Industry, this paper focuses on transportation logistics by its three sub-sectors are RT, IWT and ST. The specific research objectives of this paper are to use the Cobb-Douglas production function, multivariate linear regression function, analytical – statistical methods to assess the performance of TL in HCMC Vietnam (HCMC VN) with a perspective economics between 2011 and 2018. Based on the results and findings, authors will discuss and have comments.

2. Literature review

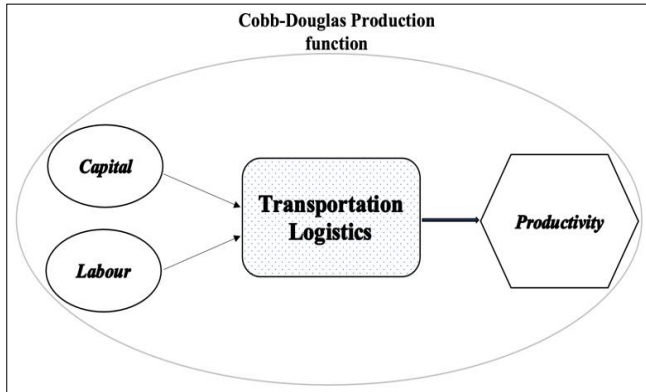
Author has searched from Web of Science database, Scopus database, Google scholar database, author has found out a number of roughly 40 published papers which related to the study scope of this paper. There is only 01 Scopus paper experimentally studied about transportation (Vinh Tuong Phi, Thai Binh Dang, 2020), and around 39 published articles in Scopus including nearly 30% is Scopus Q1 & Q2 related to Logistics 4.0, Smart Logistics, and Transportation Logistics. There were many perspectives and different approaches of the published researches on Transportation Logistics scope like Industry 4.0 implications in logistics: an overview that presented some reflections regarding the adequate requirements and issues enabling organizations to be efficient, and fully operational in Logistics 4.0 context (L. Barreto *et al.* 2017). The role of the human workforce by Industry 4.0 implementation in Logistics by an empirical evidence from a case study (Chiara Cimini *et al.* 2019). A group of empirical researches outside Vietnam which are the empirical study in Malaysia to suggest trade friendliness by the Logistics services should be improved and requires further analysis to supplement to six components for assessing Logistics Performance Index issued by the World Bank (Mohd Azlan Abu Bakara, Harlina Suzana Jaafar, 2016). The case that asset bubble price during 1986-1991 in Tokyo, Japan was an important factor that affected Logistics facility distribution in Tokyo Metropolitan area (Takanori Sakai *et al.* 2016). The spatial patterns of freight and Logistics activities in North America. The recent interest in Logistics and warehousing and its impact on the urban environment has prompted research investigating the ‘sprawling’ nature of these firms

(Clarence Woudsma *et al.* 2016). A study in Singapore that suggested a way to save costs and maximize benefits for all forwarders as well as carriers participating in booking by Enabling Carrier Collaboration via Order Sharing Double Auction (Stephanus Daniel Handoko, Hoong Chuin Lau, 2016). The key sectors are transport and Logistics and those among the commodity-producing sectors with high linkage factors to these two strategic sectors. One of the best methods of analysing the interaction between the sectors concerned might be to analyse the spillover effects (Yücel Candemira, Dilay Çelebib, 2017). An the last group of published papers that author has reviewed is transportation scope which are RT, IWT, and ST, the study presents some green vehicle routing problems with environmental costs considering pollution and noise as transportation externalities (Bartosz Sawika *et al.* 2017). Another study that concerns multi-criteria vehicle routing problems, considering maximization of capacity of truck versus minimization of utilization of fuel, carbon emission and production of noise (Bartosz Sawik *et al.* 2017). Besides, there is a study of three authors explored the possibilities of using neural nets for mode choice prediction in transportation (Ruurd Buijsa *et al.* 2020). And the two authors in Turkey studied about Clean fuel options with hydrogen for sea transportation; a life cycle approach, in the study there are two potential fuels, namely hydrogen and ammonia, are alternatively proposed to replace heavy fuel oils in the engines of sea transportation vehicles (Yusuf Bicer, Ibrahim Dincer, 2017). Enhance the efficiency of the whole sea–land combined transportation (Xinlian Xie, 2009). Structures a novel quadrant matrix analysis framework based on the green productivity growth rate and stability, using the matrix to analyze the performance of provincial road transportation industries (Hongwei Liu *et al.* 2020). There are some recommendations like institutionalization and proper regulation of IWT, improvement of logistics and infrastructural development and to boost IWT system in Ghana and other countries with similar constrains (Boadu Solomon *et al.* 2020). Pathways for a sustainable future inland water transport: A case study for the European inland navigation sector (Christa Sys *et al.* 2020). A parallel DEA model with sub-system preference is proposed to measure the integrated environmental efficiency of road transportation industry in 2013–2017 considering various undesirable outputs, then to investigate the regional differences in terms of efficiency of road transportation (Hongwei Liu *et al.* 2020). Simulating long-term performance of regional distribution centres in archipelagic logistics systems (Bertha Maya Sopha *et al.* 2020). There is a research shows that transportation-intensity effect is the main driving force behind CO₂ emission reductions in developed countries, while the energy-intensity effect is key to reducing transportation CO₂ emissions in developing countries (Chao Wang *et al.* 2020).

Due to the limitation of the paper’s length, author is not able to present all the contents that author has reviewed. In spite of the number of published papers that author reviewed is not small which roughly 40 studies but there is no study focusing on transportation logistics with empirical case in HCMC VN between 2011 and 2018 under a perspective of economics, this is the gap of this paper.

3. Methodology and data sources

3.1 Methodology



Author uses Cobb-Douglas to assess the dependence of productivity of TL on the using of input which are labour and capital. TL is transportation enterprises consists of RT, IWT, and ST.

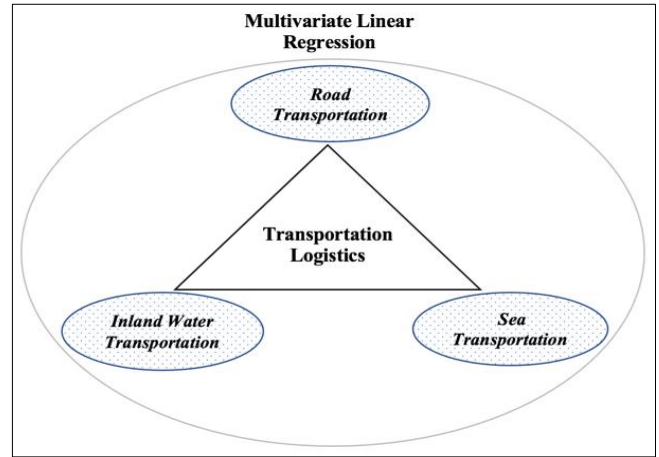
Where

TL's productivity is GDP of TL which is dependent variable
 Capital is K which is independent variable
 Labour is L which is independent variable
 Other factors such as information technology, marketing, research development that are not assessed in Cobb-Douglas of this paper.

Cobb-Douglas in this paper is $Y = aL^bK^c$

Where

a is growth coefficient like information technology, marketing, research development
 b + c: the scale of return, it shows that the tendency of the function to born return by scale
 If (b + c) = 1; marginal productivity is stable, it means if K and L increase one unit, GDP will increase one unit.
 If (b + c) > 1: marginal productivity increases gradually, it means if K and L increase one unit, GDP will increase more than one unit.
 If (b + c) < 1: marginal productivity decreases gradually, it means if K and L increase one unit, GDP will increase less than one unit.
 In this paper, author uses regression analysis for Cobb-Douglas Function by the Log function is $\log Q = \ln A + b \ln L + c \ln K$



Author uses Multivariate Linear Regression function to analyse the influence of GDP growth monthly of RT, IWT, and ST on TL's GDP growth monthly, Multivariate Linear Regression function for this paper is $Y = a + j_1X_1 + j_2X_2 + j_3X_3$

Where

Y is TL's GDP growth monthly which is dependent variable
 X₁ is RT's GDP growth monthly which is independent variable
 X₂ is IWT's GDP growth monthly which is independent variable
 X₃ is ST's GDP growth monthly which is independent variable

j₁, j₂, j₃ are regression coefficients of X₁, X₂, X₃, respectively.
 a is the intersection point of the regression line and the vertical axis (Y-intercept): this paper does not analyse this point

The higher regression coefficient the independent variable has, the more impact to the dependent variable the independent variable has.

To identify 6 indicators are number of profitable TEs, number of losses TEs, total income per each person/year, ROS (%), ROE (%), and ROA (%), authors uses analytical - statistical methods.

3.2 Data

To analyze the relationship between productivity of TL and their labour and capital by using Cobb-Douglas production, author uses data yearly between 2011 and 2018, data source is permitted to use by HCMC Statistics Department (HCMC SD).

To assess the influence of GDP growth of RT, IWT, and ST on TL’s GDP growth, author uses data monthly from Jan 2011 to Aug 2020, data source is permitted to use by HCMC SD.

To have analysis six indicators which are number of profitable TEs, number of losses TEs, % of ROS (%), ROE (%), and ROA (%), and total income / person / year, author uses data yearly from 2011 to 2018. Source of all data is also inherited by HCMC SD.

4. Theoretical basis.

4.1 Transportation Logistics (TL).

TL is to rally specializing operations, procedures which related to products movement progress from receiving point to delivering point, TL consists of services like goods consolidation, packing, transportation, distribution or goods transport consulting (Dinh Ba Hung Anh, 2017). TL is understood that the movement of people or products from this place to other place by multiple modes, different vehicles on different type of transportation (Huynh Thi Thuy Giang, 2017). Transportation is economics operation has purpose of the human to move the location of the goods and people from this place to other place by transportation vehicles (Doan Thi Hong Van, 2010). MD Sarder (2020, pp. 140) states “Transportation is vital to the sustainability of many businesses and hugely affects the economy of many countries. This is mainly because businesses basically thrive on trading and transportation is the conveyor of any form of trade (goods or services). The geographical spread of the human population and natural resources and the need for trading among different countries means transportation plays a critical role in many economies”.

4.2 Road Transportation (RT).

RT has been playing a role that cannot be replaced in the process of sustainable development (Hongwei Liu a, Ronglu Yang a, Dongdong Wu, *et al.*, 2020). RT is a transportation mode that is being used the most popular today, its advantages is flexible during the transportation, RT deliver the goods to appointed place that it does not need to transfer to other small transportation modes, the delivery time is fixed by the shipper and transporter, during the transporting the route can be changed (Dinh Ba Hung Anh, 2017). RT industry is not only promotes economic development, but also brings many issues of environment. RT sector is able to direct to shaping optimal development strategies and advancing effective policy schemes in a nation (Hongwei Liu, Ronglu Yang, Yeqing Wang, *et al.*, 2020).

4.3 Inland Water Transportation (IWT).

Water surface have been an great mode to transport people and products within and across regional, national and continental borders, there are many countries still depend on IWT for transporting of bulk and general cargo across lakes, rivers, canals over long distance, IWT that is the movement by means of a watercraft - such as pontoon, river ferries, boats (Boadu Solomon, Ebenezer Otoo, Alex Boateng, *et al.*, 2020). The competitive power of the IWT can also be strengthened in a non-traditional manner (Christa Sys, Eddy Van de Voorde, Thierry Vanelslander, 2020). IWT is also the most energy effective means of transportation, IWT uses diesel for every is roughly 100 MT per kilometres which is lower than for other modes of transportation like rail or road (Cezary Gołębiowski, 2016).

4.4 Sea Transportation (ST).

ST is suitable for goods are bulky and durable with big quantity and huge volume, ST is at slow speed, it is effected by the weather and the network of lake-sea and sea port (Dinh Ba Hung Anh, 2017). ST constitutes a huge portion of total world transportation. It is majorly used for the transportation of goods, liquid fuels, all type of products and people, ocean tankers, freight ships and barge tankers require very large amount of energy to operate that is frequently supplied by diesel or residual fuel oils (Yusuf Bicer, Ibrahim Dincer, 2017). The essential reason for a big quantities of goods is tranported by sea from origin to destination each year is due to the surface of the earch is roughly compsoed of 70% water (Xinlian Xie, 2009). ST is more than 80% of global trade to peoples and communities all over the world yearly. ST is the most efficient and cost minimization method of international transportation for almost kinds of the goods; it provides a dependable, low-cost means of transportation globally, facilitating commerce and helping to create prosperity among nations and peoples (International Maritime Organization, 2020)

5. Research results

5.1 The result of Regression analysis the dependence of TL’s productivity on the using of input which are labour and capital by applying the Cobb-Douglas production function.

Table 1: Summary of result of Cobb Douglas production function by multivariate linear regression analysis

Model		Anova	Regression Coefficient	b, c	P-value (PV)
R Square (RS)	Adjusted R Square (ARS)	Significance F (SF)	Labour	2.281	0.053
0.572	0.40	0.120	Capital	0.456	0.333

In table 1, we have analysis three parts are model, Anova, and regression coefficient:

Model: we analyse two values are RS and ARS which give us the most important information of output. RS shows how good the regression line is accurate with the actual data, this number gives information that input variables’ variance explained the output ones. The output results are RS = 0.572 which means that 57.2% output’s variables’ variance is explained by the input variables’ variance. If compare with RS, ARS is more conservative. When there are new input variables which are added to regression analysis, ARS will be quoted more often. In other words, if there are more new variables added, ARS will sure go up and it does not matter if the new input variables improve the accuracy of regression equation. Table 1 indicates ARS is 0.4, it proves that 40% of fluctuation of TL’s GDP depends on the level of using input which are labour and capital, the left 60% of fluctuation of TL’s GDP is not affected by input using level of Labour and capital.

Anova: the meaning of SF is to indicate the probability whether the regression output could have been gained by chance. The validity of regression output be confirmed by part of significance. Significance of F in table 2 is 0.120 which means that there is a 12% chance that the regression output was merely a chance occurrence.

Regression Coefficient: The PV of each value provides the likelihood is actual result and the output was not happened by

chance. The lower the PV is, the higher value the likelihood which coefficient has. In table 3, PV of Labour = 0.053 has statistical significance. PV of capital is 0.332 seems that its statistical significance is low.

$c = 0.456$, and $b = 2.281$, $b + c = 0.456 + 2.281 = 2.737 > 1$ which is evidence to prove the marginal productivity increases gradually, it means if K and L increase one unit, GDP will increase more than one unit.

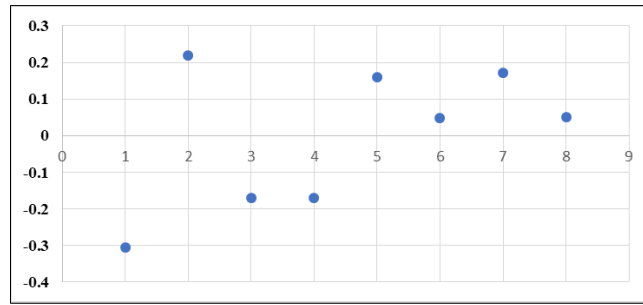


Fig 1: The residuals on a scatterplot

Figure 1 is the residuals on a scatterplot of result of Cobb Douglas by multivariate linear regression analysis of table 1. The residuals are the difference between the predicted value of regression and the real value of the output variables. The scatterplot of figure 1 shows the patterns are not arranged, hence the regression equation is understood to be valid.

5.2 The results of Multivariate Linear Regression function application to analyse the impact of GDP growth monthly of RT, IWT, and ST on TL’s GDP growth monthly.

Table 2: Summary of analysis result of Multivariate Linear Regression function.

Model		Anova	Regression Coefficient	j_1, j_2, j_3	P-value (PV)
R Square (RS)	Adjusted R Square (ARS)	Significance F (SF)	X_1	0.179	0.020
0.474	0.460	1.41723352567804E-15 (0.000000000000000141723)	X_2	0.443	0.002
			X_3	0.192	0.113

Table 2, we analyse part by part that are Model, Anova, and regression coefficient:

Model: there are two values are RS and ARS which give us the most important information of output, RS shows how good the regression line is accurate with the actual data. This number give information that input variables’ variance explain the output variables’ variance. $RS = 0.474$, ARS is 0.460 which mean the GDP growth monthly of TL depends 46% on GDP growth monthly of RT, IWT and ST. The remaining 54% of TL’s GDP growth monthly does not depends on RT, IWT and ST’s GDP growth monthly.

Anova: the meaning of SF is to indicate the probability of the regression output that it could have been gained by chance. A small SF proves the validity of the regression output. The figures in table 3 show $SF = 1.41723352567804E-15$, it has meaning that there is just 0.000000000000000141723% chance which the regression output was merely a chance occurrence, 0.000000000000000141723% indicates that there is no significance of statistics.

The P-Values of independent variables provide the actual results and the output is likelihood which was not occurred by chance. The lower the PV is, the higher value the likelihood that that coefficient has. The figures of table 3 show PV of RT’s s GDP growth and IWT’s s GDP growth has high value likelihood of coefficients which are 0.020 and 0.002 respectively, the lower value likelihood of coefficient of ST’s GDP growth is 0.113.

Regression coefficient of three independent variables are RT’s GDP growth, IWT’s GDP growth, and ST’s GDP growth are $j_1 = 0.179$, $j_2 = 0.443$, and $j_3 = 0.192$ respectively, all of them > 0 , it proves these three independent variables impact on dependent Y varibale as TL’s GDP growth.

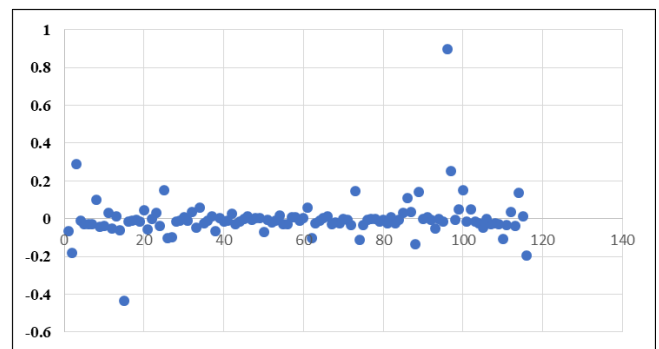


Fig 2: The residuals on a scatterplot

Figure 2 is the residuals on a scatterplot of result of by multivariate linear regression analysis of table 2. The residuals are the difference between the predicted value of regression and the real value of the output variables. The figure 2 shows the residuals on a scatterplot chart, patterns are not quite random as we can see the patterns, the regression equation is understood to be low valid.

5.3 The results of analysis six indicators are number of profitable TEs, number of losses TEs, total income / person/year, % of ROS, % of ROE, and % of ROA.

Number of profitable and losses TEs (Units)

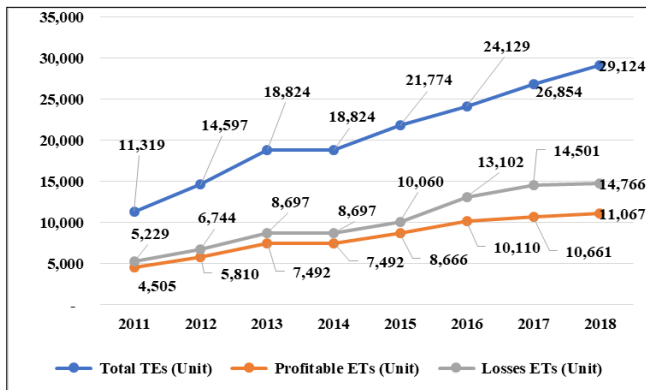


Fig 3: Number of profitable and losses TEs (Units)

Figure 3 describes the number of losses ETs is grey line which is higher than profitable ETs by orange line over the period shown from 2011 to 2018, it is more serious that the number of losses TEs in 2011 was just 5,229 units, it then increased roughly three times as 14,766 units in 2018. The orange line indicates number of profitable TEs that although it increased from the beginning to the end of the graph. However, the number went up to 11,067 units in 2018 from 4,505 units in 2011 which is still lower than the number of the losses TEs at the same time, this number shows the very weak competitiveness of TL in HCMC VN.

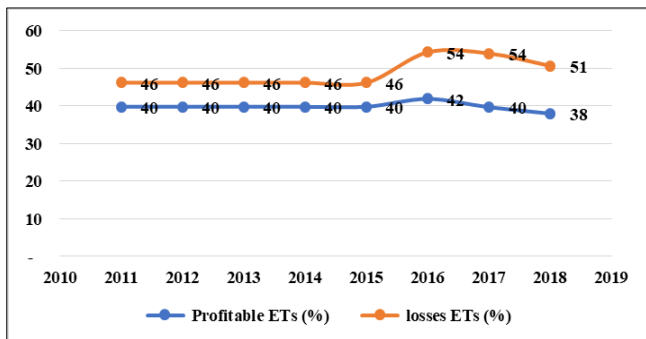


Fig 4: Number of profitable and losses TEs (%)

Figure 4 illustrates content of figure 3 in percentage (%) in order for us to look the overall picture quickly and simply that how serious situation of TL in HCMC VN. The blue line shows total number of profitable TEs is maximum at 42% over the period shown, it kept the same 40% during 5 years from 2011 to 2015 and decreased to 38% at the end in 2018. Despite increasing to 42% in 2016 there is no significant signal. The orange line performs the figures of TEs which are losses, the losses TEs situation is clearly higher than the profitable TEs during 2011 to 2018, keeping 46% over the first 5 years, and peaked 54% in 2016 and 2017, it then slightly went down to 51% in the end in 2018.

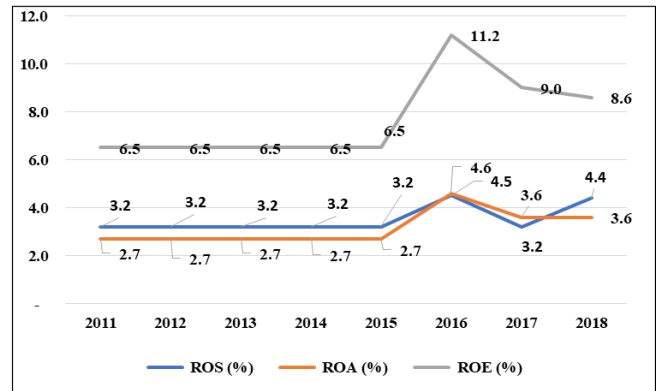


Fig 5: % of ROS, % of ROE, and % of ROA

Figure 5 is chart gives information about percentages of ROS, ROE, and ROA.

ROS is return on sales which formula = (total revenue before taxes / net sales) * 100

ROE is return on Equity which formula = (total revenue before taxes / total average capital owned by the shareholders) * 100

ROA is return on assets which formula = (total revenue before taxes / total average assets) * 100

There are three lines in the chart of figure 5 which are the orange line illustrates % of ROA, blue line describes % of ROS, and grey line indicates % of ROE. % of ROE is the highest position over the graph shown, starting in 2011 at 6.5%, keeping the same figure until 2015, it then had a peak in 2016 at 11.2%, after going down in 2018 at the figure of 8.6%. The % of ROA was the lowest during the first 5 years and in spite of slightly rose between 2016 and 2017 but then fell down again at the end as 3.6% in 2018, and also peaked in 2016 at 4.6%. The % of ROS is performed by blue line that was a little higher than ROA but still much lower than ROE, it started in 2011 at 3.2% and keeping the same level until 2015, it reached the highest level in 2016 at 4.5%, then decreased to 3.2% in 2017, again rose up at the end at 4.4% in 2018.

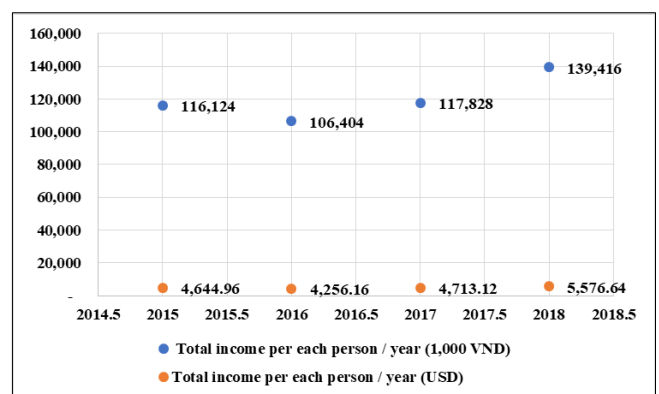


Fig 6: Total income per each person/year

Total income / person / year is charted by figure 6 in the period between 2015 and 2018 in VND and USD. The figures of the graph tell us information that total income of

employees who worked for TL is quite low, the lowest income was roughly 4,256USD/person/year in 2016, the highest level was just approximately 5,577USD in 2018, it is more serious is the figure decreased between 2015 and 2016. Although there was a very small amount of increase between 2016 and 2017, rose up by 18% in 2018. However, the total income per each employee / year during 2016 to 2018 indicates the fact that they are too low.

6. Discussion

The paper focuses on assessing TL in HCMC VN under a respective of economics, author used Cobb-Dougllass to measure the dependence of productivity of TL on the input using level of labour and capital, applying Multivariate Linear Regression function to analyse the impact of GDP growth monthly of RT, IWT, and ST on TL's GDP growth monthly, and analytical-statistical methods to have assessment six indicators which are number of profitable / losses TEs, % of ROS, % of ROA, % of ROE, and total income / person / year who worked for TL. The findings are the first is $b + c = 0.456 + 2.281 = 2.737 > 1$ is the evidence to prove that the marginal productivity of TL increases gradually, or in other words if input level of capital and labour increases one unit, GDP of TL will increase more than one unit. The second is three sub-sectors of TL are RT, IWT, and ST which their GDP growth has their regression coefficient are 0.179, 0.443, and 0.192 respectively, all of them > 0 , it strongly indicates that GDP grown monthly of RT, IWT, and ST impact on TL's GDP growth monthly. The third is the number of losses TEs is higher than the number of profitable TEs over the period studied from 2011 to 2018, detail is the number of profitable TEs is 42% (roughly 4,505 units) as the highest level and the lowest figure is 38% (around 11,067 units) in 2018, the number of losses TEs is 46% - 54% (5,229-14,766 units). The fourth is during 2011-2018, % of ROA is the lowest (2.7 - 4.6%), % of ROE is the highest (6.5 - 11.2%), % of ROS (3.2 - 4.5%) is a little higher than ROA but much lower the ROE, they are all peaked in 2016, however all of them are too low level. The fifth is total income per each employee per year of population who worked for TL in HCMC VN during 2016 to 2018 is actually too low level that approximately from 4,256USD in 2016 to 5,577USD in 2018. Based on the analysis results and findings, we can understand that is if TL wants to increase GDP it has to invest more the level of input which are labour and capital, and the method to rise up the GDP growth of TL is to improve the GDP growth of RT, IWT, and ST.

There are advantages and also disadvantages to have this manuscript done well, the disadvantages are the gap between the published papers and this study, the approaches and how to expand state-of-the-art. The advantages are the scope of this study as LT is really the strong point of author as author has 13 years working experience at position as Logistics manager in Logistics - supply chain management department for Japanese, American, Thailand multinational and transnational companies, and now author is the Lecturer teaching Logistics - supply chain in Commerce Faculty in Van Lang University, HCMC VN, and author is now studying Ph. D with economics major.

7. Conclusion

As presented on the result and discussion sections that the level to invest labour and capital that influences on the productivity (GDP) of TL, so if GDP of TL wants to be

improved labour and capital have to be invested more. The GDP grown monthly of three sub-sectors of TL are RL, IWL, and ST impact on GDP growth monthly of TL. For this reason, the way to rise up the TL's GDP is to improve GDP grown of RL, IWL, and ST. The number of losses TEs is higher than profitable TEs and peaked at 54%, number of profitable was just one year in 2016 gained 42% as a peak, and it has tendency going down in 2018 at 38%, this is really serious issue that needing have the timely solution. Percentages of ROS, of ROE, and of ROA are all too low roughly 2.7% - 11.2%. Total income / person / year of people worked for TL is really incredible small which is 5,577USD as the highest level. Based on the findings of this paper, it can be concluded is the fact of TL in HCMC VN is too weak, hence it has to research, invest and improve in all aspects. Future direction: author will study about how to improve labour and capital of TL which approach in detail based on each kind of scale of transportation enterprises such as small scale, medium scale and big scale. And will study Air transportation focusing on how it impacts on TL, the case of experiment study in HCMC VN.

Limitations: Result of analysis by Cobb-Douglas shown SF is 0.120, it has meaning that there is a 12% chance which the regression output was merely a chance occurrence, 12% indicates that the significance of statistics is not yet completely ideal, the reason may come from that the method of collecting of data input was not in the perfectly proper way. The residuals on a scatterplot chart of Multivariate Linear Regression Function to analyse the impact of GDP growth monthly of RT, IWT, and ST on TL's GDP growth monthly, patterns are not quite random as we can see the patterns, the regression equation is understood to be low valid. Data source is limited as there is only secondary data source from HCMC SD.

Acknowledgement: "This research is funded by University of Economics and Law, Vietnam National University Hochiminh City / VNU-HCM".

7. References

1. Vinh Tuong Phi, Thai Binh Dang. Selected Mode of Transportation Index (SMT) and Its Impact on Firm Performance: The Case Study of the West-Southern of Vietnam. *Transportation Research Procedia*. 2020; 45:343-351.
2. Barreto L, *et al.* Industry 4.0 implications in logistics: an overview. *Procedia Manufacturing*. 2017; 13:1245-1252.
3. Karolina Werner-Lewandowska, Monika Kosacka-Olejnik. Logistics 4.0 Maturity in Service Industry: Empirical Research Results', *Procedia Manufacturing*. 2019; 38:1058-1065.
4. Chiara Cimini, Alexandra Lagorio, Fabiana Pirola, and *et al.* Exploring human factors in Logistics 4.0: empirical evidence from a case study. *IFAC PapersOnLine*. 2019; 52-13, 2183-2188.
5. Mohd Azlan Abu Bakara, Harlina Suzana Jaafar. Malaysian Logistics Performance: A Manufacturer's Perspective. *Procedia - Social and Behavioral Sciences*. 2016; 224:571-578.
6. Takanori Sakai, *et al.* Logistics facility distribution in Tokyo Metropolitan area: Experiences and policy lessons. *Transportation Research Procedia*. 2016; 12:263-277.

7. Clarence Woudsmaa, *et al.* Logistics sprawl in North America: methodological issues and a case study in Toronto. *Transportation Research Procedia*. 2016; 12:474-488.
8. Stephanus Daniel Handoko, Hoong Chuin Lau. Enabling Carrier Collaboration via Order Sharing Double Auction: A Singapore Urban Logistics Perspective. *Transportation Research Procedia*. 2016; 12:777-786.
9. Yücel Candemira, Dilay Çelebib. An inquiry into the analysis of the Transport & Logistics Sectors' Role in Economic Development. *Transportation Research Procedia*. 2017; 25:4692-4707.
10. Bartosz Sawik *et al.* A Multicriteria Analysis for the Green VRP: A Case Discussion for the Distribution Problem of a Spanish Retailer. *Transportation Research Procedia*. 2017; 22:305-313.
11. Bartosz Sawik *et al.* Multi-Criteria Optimization for Fleet Size with Environmental Aspects. *Transportation Research Procedia*. 2017; 27:61-68.
12. Ruurd Buijsa, *et al.* Using Neural Nets to Predict Transportation Mode Choice: An Amsterdam Case Study Amsterdam Case Study. *Procedia Computer Science*. 2020; 170:115-122.
13. Yusuf Bicer, Ibrahim Dincer. Clean fuel options with hydrogen for sea transportation: A life cycle approach. *international journal of hydrogen energy*. 2017; xxx, 1-15.
14. Xinlian Xie. An integrated sea-land transportation system model and its theory. *Transportation Research Part C*. 2009; 17:394-411.
15. Hongwei Liu *et al.* Green productivity growth and competition analysis of road transportation at the provincial level employing Global Malmquist-Luenberger Index approach. *Journal of Cleaner Production*. 2020-2021; 279:123677.
16. Boadu Solomon *et al.* Inland Waterway Transportation (IWT) in Ghana: A case study of Volta Lake Transport. *International Journal of Transportation Science and Technology*. 2020; xxx (xxxx) xxx.
17. Christa Sys *et al.* Pathways for a sustainable future inland water transport: A case study for the European inland navigation sector. *Case Studies on Transport Policy*. 2020; 8:686-699.
18. Hongwei Liu *et al.* Measuring performance of road transportation industry in China in terms of integrated environmental efficiency in view of Streaming Data. *Science of the Total Environment*. 2020; 727:138675.
19. Bertha Maya Sopha, *et al.* Simulating long-term performance of regional distribution centers in archipelagic logistics systems. *Maritime Economics & Logistics*, 2020, 00166-3.
20. Cezary Gołębiowski. Inland Water Transport in Poland. *Transportation Research Procedia*. 2016; 14:223-232.
21. Chao Wang *et al.* Transportation CO₂ emission decoupling: An assessment of the T Eurasian logistics corridor. *Transportation Research Part D*. 2020; 86:102486.
22. Sarder MD. Logistics transportation problems with linear programming. Bowling Green State University, Bowling Green, OH, USA. 2020; pp. 1-35, pp. 137-167.
23. Musarrat Jehan. Logistics transportation problems with linear programming. Bowling Green State University, OH, United States. Ford Motor Company, MI, United States, 2020, pp. 331-362.