



E COMMERCE, ECONOMIC GROWTH AND GROSS DOMESTIC  
PRODUCT TO THE DEMAND FOR DELIVERY GOODS  
(Case study on PT. Pos Indonesia Tangerang)

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Abstract

PT. Pos Indonesia (Persero) is one of the companies with widely known of existence by people as communication facilities provider and also services of goods delivery. Nowadays, with increasing people needs in services of goods delivery on business competition are faced of companies so strong. The aim of this research is to analyze the growth of ecommerce and income per capita to demand service of post package delivery in PT. Pos Indonesia (Persero) Tangerang. The data used in this research are secondary data. To calculate the coefficient of that data used double linier regression model with helping of computer program in SPSS 24. From the result of the data processor  $R^2$  (coefficient determination) is 0,972 so that known that demand service of post package delivery has significant influence to demand service of post package delivery in PT. Pos Indonesia

Keyword: demand service of post package delivery, demand service of post package delivery

Introduction

The use of internet technology in marketing and selling a product has increased every year (Stansfield 2004). Indonesia is the country with the highest e-commerce growth in the world, this is marked by more and more business actors, both large and retail companies switching and developing businesses towards digital. In a press release in May 2017, Indonesia's general chairman of e-commerce association

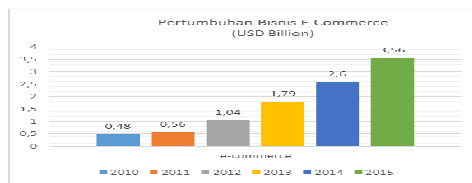
(idEA) Aulia E. Marinto said that the number of e-commerce actors would continue to grow, this was strengthened by a number of surveys of domestic and foreign information technology research institutions.

Global research from Bloomberg states that by 2020 more than half of Indonesia's population will be involved in e-commerce activities. McKinsey in a report titled "Unlocking Indonesia's Digital Opportunity" stated that the transition towards digital will increase

economic growth to US \$ 150 billion dollars by 2025 and 73 percent of internet users in Indonesia access the internet through mobile devices.

Below is a graph of the growth of e-commerce businesses collected from 2010 to 2015.

Figure 1. Graph of Indonesia's e-Commerce Growth



Source: eMarket (B2C Ecommerce Climbs Worldwide)

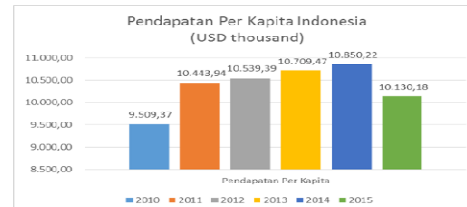
As a new economic sector, e-commerce business in Indonesia has a tremendous impact on the traditional mindset of Indonesian society. Indonesia as a developing country seeks to increase its economic growth, of course requires a new economic sector and e-commerce business is one of the new economic sectors. The rapid development of e-commerce business can make it easier for people to start a new business. Because in online business does not require a large fee to make a place of business (Sadagopan 2008).

Better human resources need to be involve on E commerce (Muhammad Nashar, Ryani Dhyhan Parashakti, and Hilda Sona Fauziah 2018).

In addition to increasing economic growth, e-commerce business also impacts the per capita income of people in Indonesia. Based on World Bank data, Indonesia's per capita income has increased from 2010 to 2014. Although there was a decline from 2014 to 2015, overall it can be said that

there has been an increase. Below is a graph of Indonesia's per capita income from 2010 to 2015.

Figure 2. Revenue Growth Chart Per Capita Indonesia



Source: World Bank

E-commerce business can run well if it is supported by the existence of reliable and reliable freight forwarding services (Huang and Benyoucef 2013). One of the shipping service companies is PT. Pos Indonesia (Persero), the oldest shipping service in Indonesia, participates in the e-commerce business ecosystem with various innovations to reach the e-commerce market which continues to increase every year. One of the efforts made by PT. Pos Indonesia (Persero) Tangerang branch to achieve the potential needs of the delivery service is to do Canvassing or pickup to the Shipper and immediately do transactions in place. Innovation from PT. Pos Indonesia (Persero) Tangerang Branch was responded positively by e-commerce players and has a positive attitude towards the company's revenue.

The rapid economic growth which is one of the factors of the use of internet technology for business needs is a challenge for PT. Pos Indonesia (Persero) Tangerang to be able to reach the market potential as much as possible and maintain the quality of service in the shipping service business. Marketing of PT. Pos Indonesia (Persero) Tangerang is currently good enough,

this can be seen from the growing revenue from freight forwarding services from 2010 to 2014 which continues to increase. But the request for shipping services in 2015.

Information from the Deputy Head of Office of PT. Pos Indonesia (Persero) Tangerang, a significant increase from 2013 to 2014 amounting to 28.14 percent has an impact on the incompatibility of operational needs with the availability of resources so that operational irregularities occur. Therefore, accurate sales forecasting is very important for a company to be able to prepare various facilities and infrastructure needs so that operations can run effectively and efficiently.

Based on the description above, the writer is interested in conducting research with the title "The Effect of E-Commerce and Per Capita Income on Demand for Goods Delivery Services at PT. Pos Indonesia (Persero) Tangerang Branch"

Background of the above problems, the authors formulate the problem as be r participate:

1. How is influence of e-commerce business growth and per capita income on demand for freight forwarding services
2. How is the influence of e-commerce business growth and per capita income simultaneously (simultaneously) on the demand for freight forwarding services
3. How is the forecast for freight forwarding in 2018 to 2020?

## Literature Review

### *Sales Forecasting*

There are several notions of sales forecasting including (Achrol and Kotler 2012): 1) Sales forecasting is a technical estimate or projection of potential consumer demand for a certain time with various assumptions. 2) Sales forecasting is an estimate of something that hasn't happened yet. 3) Sales forecasting is a Budget that contains estimates about the activities of the company within a certain period of time to come, and contains estimates of the state or financial position of the company in the future.

The core of *sales forecasting* is a potential customer demand projection technique for a certain time with various assumptions (Davis and Mentzer 2007). Jae K Shim believes, "In *business, forecast are the basis for capacity planning, production and inventory planning, manpower planning, planning for sales and market share, and financial planning and budgeting*". Thus, forecasting is very important to be done by the company to carry out all the planning within the company.

In general, the results of a sales forecast will be converted into a sales plan taking into account the following things (Achrol and Kotler 2012): 1) Management opinion. 2) Planned strategies. 3) Linkages with resources. 4) Management's determination in an effort to achieve sales goals.

In running its business the company usually takes two approaches, namely: 1) *Speculative Approach* Where the company does not take into account the risk caused by uncertainty factors: internal and external. 2) *Calculation of Risk Approach (Calculated Risk Approach)* (Heizer and Render 2006).

Sales forecasting is an approach based on taking into account the risks that might occur in the future. Sales forecasting is the center of all corporate planning that describes the potential sales and market area that will be mastered in the future. (Davis and Mentzer 2007).

In related to sales forecasting , a good strategic management is necessary to apply (DP, Parashakti, and Mercubuana 2016)

### *E-Commerce*

Electronic commerce (e-commerce) is the process of buying, selling or exchanging products, services and information through a computer network. e (Siregar and Utama 2008)

### *Income per capita*

Opinion per capita is income derived from the overall average population of a country in a given period. Usually measurement of per capita income is done per period or one year(Markusen 2013).

### *Services*

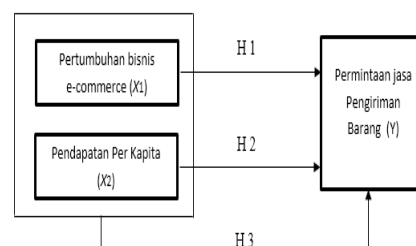
Services are often seen as a complex phenomenon. The word service itself has many meanings, from personal services (personal service) to services as products. Various concepts regarding services are widely expressed by experts such as (Mosahab, Mahamad, and Ramayah 2010) Services are basically all economic activities with output other than products in the physical sense, consumed and produced at the same time, providing added value and principally intangible

to first buyer. Whereas according to (Edvardsson and Tronvoll 2013) services or services are also activities, processes and interactions and are changes in the condition of people or something in customer ownership..

### Logical Conceptual and Hypothesis Development

The conceptual framework in this study aims to obtain a direction of research that shows that there is a relationship between E-commerce and Per Capita Income which influences the Demand for Shipping Services the conceptual framework can be taken with the thought lines drawn in the structural diagram as shown below:

Figure 3. Conceptual Framework



Based on the above logical framework, the summary of hypotheses in this study is as follows:

- H1: The growth of e-commerce business increases the demand for freight services
- H2: Per capita income increases the demand for freight services
- H3: Growth of e-commerce business and per capita income together (simultaneously) increases the demand for freight.

## Research Design

The Quantitative approach is used because the data to be taken to analyze the effect of variables e l is expressed by numbers.

### *Variable Definition and Operations*

#### 1. Variable Definition

Variable According to (Sugiono 2004), is an attribute or the nature or value of an object or activity that has a certain variation applied by the researcher to be studied and then drawn into conclusion.

- (1.) The independent variables are variables that influence the cause changes or the emergence of the dependent variable (dependent). In this study the dependent variable (X) is the growth of e-commerce (X1) and per capita income (X2).
- (2.) Bound Variable (dependent  $t$ ), the dependent variable is the variable that is affected or which is the result, because of the independent variable (free). In this study the dependent variable (Y) is the Request for Goods Delivery Services.

### *Data Analysis Method*

#### 1. Descriptive Statistics

(Sugiono 2004) , states that data analysis techniques in quantitative research use statistics. In this study data analysis will be used in descriptive statistical techniques.

#### 2. Classic assumption test

##### a. Normality test

Normality test aims to examine whether in the regression model, confounding variables have a normal distribution (Ghozali 2011) Normality test can be done in two ways, namely graph analysis and statistical analysis. The method used to test the residual normality is to use the *Kolmogrov - Smirnov test*. If *Asymp. Sig (2-tailed)* > 0.05 then the data is normally distributed and vice versa.

##### b. Multicollinearity Test

This test aims to examine whether the regression model found a correlation between independent variables.

##### c. Heteroscedasticity Test

This heteroscedasticity test aims to see whether the data variance is homogeneous or heterogeneous.

#### 3. Test of Multiple Linear Regression Analysis

Multiple regression analysis is used as a statistical analysis because this study was designed to examine the variables that influence the free variable (Then the formulation of the analysis model used in this study according to (Sugiono 2004), namely :

$$Y = a + b_1 X_1 + b_2 X_2 + e$$

#### 4 Hypothesis testing

##### a. Determination Coefficient

The determination coefficient test aims to find out how big the variable X1 (e-commerce growth) is, X2 (Per Capita Income) on the variable Y (Demand for Freight Services).

The guidelines for interpreting the correlation coefficient or how much influence the *independent* variables (*dependent*) on the *dependent* variable (*dependent*), used the guidelines proposed by (Sugiono 2004)

b. Model Accuracy Test

On basically show is all independent variables in the model have the right influence on a together to dependent variable (Ghozali 2011).

The influence of the independent variables are: The growth of e-commerce and income per capita Against Demand Service Delivery of goods as the dependent variable.

The hypothesis that were used in this study are:

- (1.)  $H_0: \beta_1, \beta_2 = 0$ , independent variables (growth of e-commerce and income per capita) are not have significant influence on a together to the dependent variable (Request for Goods Delivery Service).
- (2.)  $H_a: \beta_1, \beta_2 \neq 0$  variable-independent variables (growth of e-commerce and per capita income) have significant influence on a together to the dependent variable (demand for freight forwarding services).

The basis for taking the decision, that is, by comparing the calculated F value with F table:

- (1.) If  $F_{table} > F_{counts}$ ,  $H_0$  is accepted and  $H_a$  is rejected.
- (2.) If  $F_{table} < F_{counts}$ , then  $H_0$  is rejected and  $H_a$  is accepted.

c. Partial Significance Test (t test)

The t test basically shows how far the influence of an independent variable individually in explaining the variation of the dependent variable (Ghozali 2011).

Discussion

*Statistical Test Results Descriptive*

Descriptive statistics are used to see a general picture of the data collected in this study. The description can be seen from the results managed in the table below:

Table 3. Descriptive Analysis Test Results

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Growth of e-commerce business		,1134	1,7851	,499583	,4674894
Income per capita		2243,84	2732,98	2590,9404	125,88805
Request for Freight Services		9198,00	22335,00	16470,8333	4274,78531
Valid N (listwise)					

There are three variables (e-commerce business growth, per capita income and demand for goods delivery services) with a total of twenty-four samples. In the table can be seen the mean, standard deviation of each value of each variable and the minimum value as the lowest value for each variable and the maximum value as the

highest value for each variable. Some explanations regarding the results of statistical calculations are described as follows.

1. Growth of e-commerce business  
 From the results of descriptive statistics testing, the average growth of e-commerce business in the observed period was \$ 499,583,000, where the deviation of the deviation was \$ 113,400,000. With a minimum value of \$ 37,600,000, and a maximum value of \$ 1,785,100,000.

2. Income per capita  
 From the results of descriptive statistical testing, the average per capita income in the observed period is \$ 2,590.94, - where the deviation is \$ 4274.79, -. With a minimum value of \$ 9,198, - and a maximum value of \$ 2,732.98,

3. Delivery service request  
 From the results of descriptive statistical testing, the average demand for freight forwarding services in the observed period was 16470.8 packs. Where the standard deviation is 1,406 packs. With a minimum value of 2,973 packs and a maximum value of 22,335 packs.

#### Classical Assumption Test Results

a. Normality Test Results  
 The normality test used in this study is to use the *one sample kolmogorov smirnov test* which can be seen in the significance, if the significant value > 0.05 then the variable are said to be normally distributed.

Table 4. *One-Sample Normality Test Results of Kolmogorov-Smirnov Test*

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		24
Normal Parameters <sup>a, b</sup>	Mean	.0000000
	Std. Deviation	.01854221
Most Extreme Differences	Absolute	.156
	Positive	.095
	Negative	-.156
Statistical Test		.156
Asymp. Sig. (2-tailed)		.138 <sup>c</sup>
a. Distribution test is Normal.		
b. Calculated from data.		
c. Lilliefors Significance Correction.		

Based on the results of testing with the KS method from the calculation results obtained the value of Asymp sig (2-tailed) Unstandardized Residual Regression is 0.138 above 0.05. so that it can be stated that all data in this study fulfill assumptions and are normally distributed.

b. Test results Multicollinearity  
 This multicollinability test is used to find out if there is a *Colinearity*. The method used is to calculate *Tolerance* and VIF. (See Table 5.)

Based on table 4. above, it is known that the tolerance value of each independent variable, namely the growth of e-commerce business (X1) is 1,000 and per capita income (X2) is 1,000. From the results of the output variance inflation factor (VIF), each independent variable is known, namely e-commerce business growth (X1) of 1,000 and per capita income (X2) of 1,000. Thus, the two independent variables have a tolerance value > 0.10 and VIF value < 10, so that it can be con-

cluded that there is no multicollinearity between independent variables.

Table 5. Multicollinearity Test Results

Model		Unstandardized Coefficients		Collinearity Statistics	
		B	Std. Error	Tolerance	VIF
1	(Constant)	-35614,090	5298,304		
	Growth of e-commerce business	7201,263	549,320	1,000	1,000
	Income per capita	18,714	2,040	1,000	1,000

c. Heteroscedasticity Test Results  
 Heteroscedasticity test aims to test whether in the regression model

there is a variance inequality from residuals or observations to other observations.

Table 6. Heteroscedasticity Test Results

Model		Unstandardized Coefficients		t	Sig.
		B	Std. Error		
1	(Constant)	906,525	2639,620	, 343	, 735
	Growth of e-commerce business	391,912	273,672	1,432	, 167
	Income per capita	-, 046	1,016	-, 045	, 964

Based on the output in table above, it is known that the significance value of e-commerce business growth variables (X1) is 0.167 greater than 0.05, meaning that there is no heteroscedasticity in e-commerce business growth variables (X1). The significance value of the variable per capita income (X2) is 0.964 greater than 0.05, meaning that there is no heteroscedasticity in the variable per capita income.

#### Multiple Linear Regression Analysis Test Results

Multiple linear regression test is to know the description of the effect of two or more variables X as an independent variable (free) with Y variable as the dependent variable (bound).



Table 7. Test Results of Multiple Linear Regression Analysis

Model	Unstandardized Coefficients	
	B	Std. Error
1 (Constant)	-35614,090	5298,304
Growth of e-commerce business	7201,263	549,320
Income per capita	18,714	2,040

Based on table 7 can be obtained the formulation of multiple linear regression equations for independent variables (per capita income and e-commerce business growth) to the dependent variable (demand delivery service forecasting) as follows:

$$Y = a + b_1 X_1 + b_2 X_2$$

$$Y = (35614, 090) + 7201, 263 X_1 + 18,714 X_2$$

Where;

Y: Request for freight forwarding services

X1: Growth of e-commerce business

X2: Per capita income

#### Hypothesis Test Results

- a. Test the coefficient of determination ( $R^2$ )

The results of this test can be seen from the value of Adjusted R Square in the Model Summary table.

In Table 8 the results of the coefficient of determination or the value of Adjusted R square ) is 0.917 or 91.7%, which means that the contribution of Goods Delivery Request can be explained by the variable per capita income and the growth of e-commerce business. The remaining 8.3% is explained by other variables not examined in this study. Standard error of the

estimate is 1231, 57607 smaller than the standard deviation that is equal to 4109, 61114 which means the regression equation can be used as a predictor (a tool for prescribing)

- b. Simultaneous significance test (statistical test F)

Table 8. Result of Terminated Coefficient Test

Summary Model				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,961 <sup>a</sup>	,924	917	1231,57607

Table 9. Test Result F

Model	df	F	Sig.
1 Regression	2	128,049	,000 <sup>b</sup>
Residual	21		
Total	23		

Based on the table above, the significant F value is 128.049 with a probability of sig 0.000 < 0.05. To make a decision, it can be concluded that the independent variable, namely per capita income and e-commerce business growth together (simultaneously) has a positive effect on the dependent variable, namely the Delivery of Goods.

- c. Individual significance test (t test)

From table shows that on the results of the calculation of multiple linear regression analysis after calculation with IBM SPSS 24, obtained the following values:

- The growth of e-commerce business ( $X_1$ ) has a significance value (0,000 < 0, 05) so  $H_0$ 's decision results are rejected, which partially e-

- commerce business growth (X<sub>1</sub>) has a positive and significant effect on the variable freight forwarding services at PT. Pos Indonesia (Y).
- Per capita income (X<sub>2</sub>) has a significance value (0,000 < 0, 05) so

Ho's decision is rejected, which partially per capita income (X<sub>2</sub>) has a positive and significant effect on the variable demand for freight forwarding services at PT Pos Indonesia (Y).

Table 10. Test Results

Model	Standardized Coefficients Beta	t	Sig.
1 (Constant)		-6,722	000
Growth of e-commerce business	, 788	13,109	000
Income per capita	, 551	9,174	000

Based on the results of the research described earlier, it shows that there is a partial and simultaneous influence between the work environment and compensation for job satisfaction. The following is an explanation of the answers to the research hypothesis.

- The influence of e-commerce business on the demand for goods sending services

Based on the results of the study it can be seen that the e-commerce business growth variables have an influence on the demand for freight services at PT. Pos Indonesia (Persero) Tangerang for the period of 2010 to 2015. The coefficient of e-commerce business growth is 7201,263 which means that every e-commerce business growth is US1- it will increase the demand for freight services at PT. Pos

Indonesia (Persero) Tangerang as many as 7,201 packs. The significance value in the t test is 0,000 (less than 0.05) according to (Ghozali 2011), showing that there is a significant relationship to the dependent variable, or in other words the e-commerce business growth variable partially affects the demand for shipping services at PT. Pos Indonesia (Persero) Tangerang.

Thus, the first hypothesis (H1) is proposed in this study where e-commerce business growth affects the demand for shipping services can be accepted and can be used as a demand for freight forwarding services at PT. Pos Indonesia (Persero)

- Effect of per capita income on demand for freight forwarding services

Based on the results of the study it can be seen that the variable per capita income has an influence on the demand for freight forwarding services at PT. Pos Indonesia (Persero) Tangerang

for the period of 2010 to 2015. The value of the per capita income coefficient of 18.714 means that every increase in per capita income of \$ 1, - it will increase the demand for freight services at PT. Pos Indonesia (Persero) Tangerang as many as 18 packs. The significance value in the t test is 0,000 (less than 0.05) according to (Ghozali 2011), showing that there is a significant relationship to the dependent variable, or in other words the variable per capita income partially affects the demand for shipping services. This research is in line with research conducted by (Parhusip, Topowijono, and Sulasmiyati 2016) which states that per capita income has a positive effect on demand for freight forwarding services.

Thus, the second hypothesis (H2) proposed in this study where per capita income influences the demand for shipping services can be accepted and can be used as a demand forecasting of freight forwarding services.

3. The influence of e-commerce business growth and per capita income together (simulated) on the demand for freight services

Based on the results of research on the F test, it is known that the e-commerce business growth variables and per capita income have a significant value of F at 128.049 with a probability of sig 0,000 (less than 0.05). So it can be concluded that the independent variable, namely per capita income and e-commerce business growth together (simultaneously) has a positive

effect on the dependent variable, namely the Delivery of Goods.

Determination test results (R<sup>2</sup>) show the coefficient of determination or the value of Adjusted R square  $[(R)^2]$  of 0.917 or 91.7%, which means that the contribution of Goods Delivery Request can be explained by the variable per capita income and the growth of e-commerce business. The remaining 8.3% is explained by other variables not examined in this study.

4 Forecasting the number of requests for delivery services of PT. Pos Indonesia (Persero) Tangerang Branch for 2018 to 2020

The growth of e-commerce business based on eMarket data in 2018 is USD 8.5 billion, 2019 amounting to USD 14.3 billion and 2020 amounting to USD 24 billion. While the growth of e-commerce business is based on data from world bank for 2018 amounting to USD 10.210, in 2019 USD 11,880, and 2020 is projected at USD 12,650,.

The amount of projected growth of e-commerce business and per capita income above is interpolated per quarter so that the data in the following Table 11. is found.

By using the equation  $Y = (35614, 090) + 7201, 263 X_1 + 18,714 X_2$ , then it can be projected the number of requests for freight forwarding services at PT. Pos Indonesia (Persero) Tangerang Branch as in the following Table 12.

Table 11. E-commerce Growth Projection and Indonesia's Per Capita Income

Period	e-Commerce	Income per capita
2018Q1	1,79453125	2346,71875
2018Q2	1,97421875	2493,28125
2018Q3	2,21484375	2625,78125
2018Q4	2,51640625	2744,21875
2019Q1	2,87890625	2848,59375
2019Q2	3,30234375	2938,90625
2019Q3	3,78671875	3015,15625
2019Q4	4,33203125	3077,34375
2020Q1	4,93828125	3125,46875
2020Q2	5,60546875	3159,53125
2020Q3	6,33359375	3179,53125
2020Q4	7,12265625	3185,46875

Table 12. Projection of Demand for Freight Services

Period	Number of Requests
2018Q1	21,225
2018Q2	25,262
2018Q3	29,474
2018Q4	33,863
2019Q1	38,426
2019Q2	43,166
2019Q3	48,081
2019Q4	53,171
2020Q1	58,438
2020Q2	63,880
2020Q3	69,498
2020Q4	75,291

Based on Table 12, it can be seen that the number of requests for goods delivery services per quarter in 2018 to 2020 so that management at PT. Pos Indonesia (Persero) Tangerang Branch can take strategic steps from the operational side such as human resource needs, facilities and facilities so that the operational quality in shipping services can be continuously improved effectively and efficiently.

### Conclusion

After the author conducts research and discussion in the previous chapter about the demand forecasting of freight forwarding services at PT. Pos Indonesia (Persero) Tangerang by using the independent variables of e-commerce business growth and per capita income, where the data that the authors took for this research is 2010 to 2015 and interpolated using evIEWS 9, the authors can conclude as follows.

1. The e-commerce business growth variable has a significant effect on the demand for freight services. This means that increasing the growth of e-commerce business will also contribute to increasing demand for shipping services at PT. Pos Indonesia (Persero) Tangerang.
2. The independent variable per capita income in the year conducted by the research has a significant effect on the dependent variable of demand for freight forwarding services. This means that an increase in per capita income participates in increasing the demand for freight forwarding services at PT. Pos Indonesia (Persero) Tangerang.
3. The independent variables of e-commerce business growth and shared per capita income (simultaneously) contribute to increasing the demand for freight services at PT. Pos Indonesia (Persero) Tangerang amounted to 91.7% and the remaining 8.3% was influenced by other variables not carried out in this study.

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