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THE IMPACT OF INCREASING TOLL SHOP AUTOMATION ON INCOME TAX WITH VEHICLE VOLUME AS A MODERATTING VARIABLE

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A R T I C L E I N F O

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Vehicle Volume,
Increasing Toll Shop

ABSTRACT

The purpose of this study was to determine the impact of increasing the automation of toll booths on income tax with vehicle volume as a moderating variable. This research method uses the Sem PlS 3.0 method with secondary data obtained from the annual hassle of PT. Jasa Marga in 2009-2018. The result of the research is that automatic toll booths have a significant effect on income tax and vehicle volume while vehicle volume on income tax has no effect.

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1. Introduction

The emergence of the Industrial revolution I with the creation of the steam engine had an impact on world development, the rise of the industrial revolution continued until the emergence of the industrial revolution 4.0 by highlighting the digitalization of systems in almost all aspects of human life. It is called the digital revolution because of proliferation computers and the automation of records in all fields [1]. The digitization includes the digitization of networks; digitization of products and services; and the digitization of business models, the Industrial Revolution 4.0 is a stage in knowledge development where the boundaries between the physical, digital and biological worlds are getting thinner [2]. Current technological developments have a substantial influence on work so that work can be completed more easily and faster even with a fairly large volume [3].

In this regard, as one of the toll road managers, PT. Jasa Marga sees the need for the application of the digitalization method to reduce the level of congestion that usually occurs in front of toll gates, this is to anticipate the soaring in and out flow of vehicles, considering the industry and the volume of motorized vehicles that continue to increase from year to year (Annual Report, PT. Jasa Marga Marga, 2010). The number of vehicles increased by about five percent in 2019 or as many as 7,108,236 units to 133,617,012 units from 2018 which amounted to 126,508,776 units. The volume of vehicles in 2018 increased by 5.9 percent from 2017 which only amounted to 118,922,708 units [4]. The digitalization pattern in question is the application of toll gate automation.

Technological advances allow automation in almost all fields. New technologies and approaches that combine the physical, digital, and biological worlds will fundamentally change the pattern of human life and interaction [5]. Automation of toll booths has replaced humans as toll guards[6]. With the implementation of toll gate automation, it is expected to accelerate the transaction process at toll gates from an average of 15 seconds to only 5 seconds, causing an increase in the volume of vehicles entering toll roads [7], with the increase in transaction volume, it is expected to increase revenue. and will increase the taxes the company has to pay. However, with the development of digital technology for the government, it is a challenge, especially in tax collection and supervision. With the large number of changes in human labor by machines or robots[2] the income from the personal tax payer's income tax sector will decrease, while from corporate income tax, the more volume of vehicles that enter, the greater the corporate income tax to be paid.

Several previous studies stated that the number of automatic toll booths that can control toll road congestion is a minimum of 11 substations [8] thus an increase in automatic toll booths can increase

the income of PT Jasa Marga [9] and [10]. This is supported [11] that the application of a non-cash payment system can increase toll road user satisfaction. Tests by comparing the automatic and conventional toll booth systems result that automatic toll booths are superior to conventional toll booths [12]. The automatic toll booth system with RFID technology that is designed to be environmentally friendly [13] enables toll road users to save time and reduce paper waste. With the standard transaction, the average GTO is at least 5 seconds, making the effectiveness of transactions at toll gates even better [14]. However, there is no empirical literature on the impact of increasing toll booth automation on income taxes with vehicle volume as a moderating variable, so a study of these variables needs to be investigated.

2. Methods

2.1 Automatic Toll Gate

Economist from the United States who won the Nobel Prize in Economics, S. Vickrey in the late 1950s was the figure behind the electronic toll payment system that allows motorists not to stop their vehicle when transacting at toll gates. Vickrey, who studies transportation problems in Washington DC, stated the need for electronic automation of toll payments by utilizing transponders installed in each vehicle, although not fully what Vickerey expected, the implementation of Vickerey's thinking was tried to be realized with an IPass payment system.

The application of the payment system from Vickerey is widely applied in the toll road network in Indonesia, where what is meant by a toll road is a cross-road which is an alternative to existing public roads, has specifications for freeways and toll roads are only intended for road users. who use motorized vehicles with 4 or more wheels by paying tolls (Article 14 of Law No. 13 of 1980). This automatic payment system is known as GTO (Automatic Toll Gate).

A payment system with toll gate automation or GTO (Automatic Toll Gate) is an automatic payment mechanism using electronic cards from certain banks with the following systems and methods:

a. When the vehicle enters via the GTO, the driver taps the electronic card on the reader GTOtoll will open automatically. The electronic card records the toll gate where the vehicle entered.
b. When the vehicle exits the gate via GTO exit, the driver taps the electronic card on the readermachine and the reader machine will record where the vehicle came from, and calculate how much toll fees must be paid and automatically credit (deduct the balance of the electronic card) and the ALB (Automatic Line Barrier) will open .

The use of electronic cards combined with automatic toll gates will shorten the transaction time [14], where the time barrier so far is due to the fact that many motorists do not use exact money, so it takes time to return the cash [12]. By implementing cash less using GTO, it will avoid long queues in front of toll gates.

2.2 Corporate Income Tax

Tax is the transfer of wealth from the people to the state treasury to finance routine expenses and the "surplus" is used for public saving which is the main source for financing public investment [15]. Taxes are classified into several groups with several bases, one of which is income tax which is a central tax (collected based on national rules/laws). In accordance with Law Number 36 of 2008 the object of income tax is income, namely any additional economic capability received or obtained by a Taxpayer, both from Indonesia and from outside Indonesia, which can be used for consumption or to increase the wealth of the Taxpayer concerned. , by any name and in any form .

In general, the subject of income tax consists of two, namely domestic tax and foreign tax, domestic tax consists of three groups, namely, corporate tax, individual tax and inheritance tax. In corporate tax, the application will differ from one another depending on the source and method of obtaining the income. According to (Annual Report, PT. Jasa Marga, 2010) the applicable corporate taxes for toll road management are:

a. Income Tax Article 21.

Income tax 21 or individual income tax is income in the current year through withholding tax on income received or earned by domestic individual taxpayers (employees) in connection with the work, services provided.

b. Income tax article 23.
Income tax article 23 is a tax withheld/collected on income earned by domestic taxpayers originating from capital, service delivery for other activities other than those withheld income tax article 21.

2.3 Relationship between the e-toll system and income

PT. In 2009, Jasa Marga as a toll road provider used product innovation technology in the form of an e-toll card as a substitute for cash transactions. This was necessary to anticipate congestion on toll roads, especially during peak hours. However, at the beginning of the year of its launch, only 12% of toll road users used this card according to Gunaldi and Sihombing (2015) in [10]. There is a significant relationship between the e-toll system and the income of toll road managers [10] which is also supported [9]. Both literatures show that the results obtained are directly related to income, but there is no literature that shows an indirect relationship to sales, namely to corporate income tax. Object of research is PT. Jasa Marga, one of the national toll road managers, uses secondary data obtained from the annual report published by PT. Jasa Marga, which was published from the 2009-2018 financial year, this year was taken from the start of gate automation until the end of the toll gate automation program. The data taken from this report is in the form of the number of GTOs, the volume of incoming vehicles and the amount of taxes paid by PT Jasa Marga. data was processed using SEM-PLS 3.0 software with the following research model:

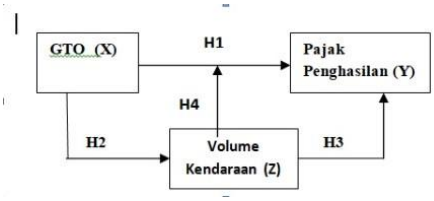

Figure 1. PT Jasa Marga data

3. Result and Discussion

3.1 Result

Based on the data processing carried out using Structural Equation Modeling (SEM) with Smart PLS (Partial Least Square) 3.0 software, statistical data was obtained which shows the perception of the processing results which can be described as follows

a. Descriptive

Statistics Research data collected from the Annual report published by PT. Jasa Marga, which started from 2009 to 2018 obtained data on the number of Automatic Toll Gate (GTO), the volume of vehicles passing through the PT. Jasa Marga and corporate income tax can be seen in table 1

TABLE 1
DATA PROCESSING RESULTS

for the Year	GTO	Vehicle volume (000)	Income tax (000)
2009	5	916.483	211.682.000
2010	99	956.890	291.854.000
2011	19	1.091.779	410.890.000
2012	50	1.201.366	519.450.000
2013	89	1.258.520	476.830.000
2014	293	1.319.600	606.640.000
2015	399	1.380.000	749.000.000
2016	428	1.361.300	847.000.000
2017	619	1.361.300	847.000.000

for the Year	GTO	Vehicle volume (000)	Income tax (000)
2018	1.190	1.263.790	1.173.800.000

The results of the secondary data (table 1) are processed using PLS and each indicator shows the average number, median, lowest number (minimum) and highest number (maximum) and standard deviation as shown in table 2. Based on the data After ten years of research, the average number of Automatic Toll Gates (GTOs) is 310 units per year, with a median value of 293 and the lowest number is 5 units that occurred in the initial year of the study. While the indicator of the volume of vehicles entering the toll road belonging to PT. Jasa marga averages 1,209,939,000 vehicles per year. With a median value of 1,263,790,000 and the lowest number of vehicles entering the toll road as many as 916,483,000 which occurred in 2009. While the highest number of 1,380,000,000 units occurred in 2015. Likewise with the income tax paid by the company on average annually. of Rp. 644.414.600,000, with a median or median value of Rp. 606.640 million and the highest tax payment of Rp. 1,173,800,000,000 in 2018, while the lowest income tax payment was in Rp. 211,682,000,000 in 2009.

TABLE 2
DESCRIPTIVE STATISTICS

Indicators	Mean	Median	Minimum	Maximum	Standard Deviation
GTO	310.1	293	5	1,190	357.32
Vol. Vehicles (000)	1,209,939	1,263,790	916,483	1,380,000	159,004
Income Tax (000)	644,414,600	606,640,000	211.682,000	1,173,800,000	317,204,907

b. Validity Test

Scientific processing can be accepted if the instrument the input is valid, because the validity of the data shows the degree of accuracy between the data that actually occurs on the object and the data that can be collected by researchers [16]. Based on secondary data collected by researchers, valid data have been obtained, because they are sourced from real reports published by the company. However, to provide confidence in the Validity measurement, the researcher uses the Average Variance Extracted (AVE) analysis. The results of the validity measurement with the term Convergent Data are said to be valid if they have an Average Variance Extracted (AVE) value > 0.05 (Hartono, 2014).

Based on these criteria, the researcher presents data that ensures its validity with the value of each instrument being 1,000 and all instruments are declared valid, as shown in table 3.

TABLE 3
VALUE OF AVE-VALIDITY

Indicator	AVE Value	Assessment
GTO	1,000	Valid
Vol. Vehicles	1,000	Valid
Income Tax	1,000	Valid

c. Reliability Test

As with validation tests, Reliability Tests as a measuring tool to see the consistency of information over time [17] in this study are not needed, but to be sure, researchers keep taking measurements using research instruments with indicators of *cronbach alpha values*, which are said to be reliability if the data has *cronbach alpha* >0.6.

Based on the data presented in table 4, the three research instruments show a convincing level of reliability with an overall value of 1,000.

TABLE 4
VALUE CRONBACH ALPHA

Indicator	Value *Cronbach Alpha*	Assessment
GTO	1000	Reliable
Vol. Vehicles	1000	Reliable
Income Tax	1000	Reliable

3.1 Discussion

a. The Impact of GTO on the Amount of Corporate Income Tax (H1)

Based on table 6, the existence of the Automatic Toll Gate (X) has a positive influence on the amount of Corporate Income Tax (Y), because the t-statistical value is above 1.96 or 26,009 and the P-Value is below 0.05 i.e. 0.000. This is supported by [10] and [9] that the increase in automatic toll booths has an impact on increasing the income of toll road managers.

b. The Impact of GTO on the Number of Vehicle Volumes (H2)

The existence of the Automatic Toll Gate has a positive influence on the volume of vehicles using the Jasa Marga (Z) toll road, because the T-statistic value is 3,057 which means it is greater than 1.96, as well as the P-Value smaller than 0.05, which is 0.002, so hypothesis H2 which states that there is a positive influence between the number of GTOs on the volume of toll road users' vehicles is acceptable. This is in line with [14] that transaction speed has an impact on high vehicle volume.

c. Impact of Vehicle Volume on Corporate Income Tax (H3) The

Relationship between vehicle volume and the company's income tax does not have a positive effect, this can be seen from the T-Statistic value of 1.853 (below 1.96) and P-Value of 0.064 (above). 0.05).

d. The Impact of the Number of GTOs on Corporate Income Tax Mediated by Vehicle Volume (H4)

As discussed in table 6, the direct effect of the number of GTOs on Corporate Income Tax has shown a positive effect, the T-Statistic and P-Value numbers have met the *rule of tumbs* set. Is this positive effect due to the mediation of vehicle volume (Z). If we compare the loading of direct and indirect correlation factors, the direct value is 0.912 *(*Table 5*)*, while the indirect correlation is T-Statistic value of 1.236 or less than 1.96 and P-Value of 0.217 (above 0.05) as presented in Table 7. Thus, the hypothesis of the relationship between the number of GTOs on Corporate Income Tax with vehicle volume as an intervening variable does not have a positive effect.

TABLE 5
TABLES BETWEEN CONSTRUCT

Variables	Original Sample Estimate	Mean Of Sub Sample	Standard Deviation	T Statistics	P-Value	Hypothesis Result
GTO-Vol Vehicle – Income Tax	0.200	0.177	0.162	1.236	0.217	Rejected

4. Conclusions

Based on the results of the analysis that the presence of automatic toll booths has a positive effect on corporate income tax. In line with the second hypothesis, namely the existence of an automatic toll booth system has an impact on increasing the volume of vehicles using toll roads. However, the increase in vehicle volume has no effect on corporate income tax. This means that the number of automatic toll booths and the increase in vehicle volume cannot affect corporate income tax.

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