

The Influence of VTS and Mastercable Services on PNBP in the Class I Tanjungpinang Navigation District

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ABSTRACT: This research aims to analyze the influence of Vessel Traffic Service (VTS) and Mastercable services on Non-Tax State Revenue (PNBP) at the Tanjungpinang Type A Class I Navigation District Office. The study uses a quantitative approach by analyzing PNBP recapitulation data from 2020 to 2022. Data analysis techniques include classical assumption testing, multiple linear regression, and hypothesis testing, all conducted using Eviews version 12. The classical assumption tests confirm that the data meet the criteria of normality, and show no signs of multicollinearity, heteroscedasticity, or autocorrelation. The regression analysis demonstrates that both VTS and Mastercable variables have a significant and positive effect on PNBP. The results of the t-test support this conclusion, indicating that improvements in VTS and Mastercable services are associated with an increase in non-tax revenue. Furthermore, the coefficient of determination (R^2) reveals that the VTS and Mastercable variables account for 70.45% of the variation in PNBP during the observed period. These findings highlight the strategic role of navigation services in optimizing state revenue outside of taxes, and support efforts to enhance service innovation and system integration to further improve performance and financial outcomes in the maritime sector.

Keywords: Vessel Traffic Service (VTS), Mastercable and Non-Tax State Revenue (PNBP).



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INTRODUCTION

Public sector accounting is accounting used by non-profit organizations and has its own characteristics, different from companies or the private sector (Pirson et al., 2019). Public sector accounting specifically includes government accounting, hospital accounting, educational accounting, and accounting for non-profit organizations that are not solely seeking profit (Sitepu et al., 2023). Because Indonesia currently has the highest public demand, it affects the performance, transparency, and accountability of the government (Chrisman, 2019). Therefore, public sector accounting has grown quite rapidly. Indonesia as part of the world community has an obligation to continuously participate or take part in realizing good governance (BPS, 2023). Government

agencies in explaining their duties require accounting reports, both as a basis for analysis and to improve the quality of financial supervision and management (Muthaheer, 2019).

State revenue is the income obtained by a country to finance and implement every work program that has been prepared by the government (Yunusovich et al., 2021). Sources of state revenue include tax revenue, non-tax state revenue, and grants from within the country and abroad. And from the various sources of revenue, the largest state revenue comes from the taxation sector (Suharjono, 2014).

The Ministry of Transportation is strengthening the latest technology-based navigation system in several Indonesian ports to reduce the rate of ship accidents in the country. The shipping navigation system is based on the vessel traffic services & safety system (GMDSS) (Ilcev, 2020). The sea is a communication lane (sea lane on communication) which means that the use of the sea for the benefit of shipping traffic between islands, between countries and between continents for both passenger and goods transportation (Arora et al., 2023), so it is necessary to determine the Indonesian archipelago sea crossing route for the benefit of local and international shipping as well as shipping safety facilities (Siswoyo, 2020).

The management of Non-Tax State Revenue (PNBP) continues to be optimized by the Indonesian government. In order to optimize PNBP as a support for national development (Kusumaramdhani, 2022). PNBP is one of the sources of state revenue that needs to be managed and utilized to improve services to the community (Ditisrama et al., 2022). PNBP has a significant contribution to finance state spending, although the amount is not as large as the revenue from the tax sector (Yamin et al., 2018). State revenue is basically sourced from 2 main aspects, namely Tax Revenue and Non-Tax State Revenue (PNBP) and supported by Grant Revenue (Putri, 2021). According to Government Regulation of the Republic of Indonesia Number 15 of 2016 concerning the types and rates of Non-Tax State Revenue applicable to the Ministry of Transportation, it is explained that the Non-Tax State Revenue (PNBP) of the Navigation District consists of VTS Navigation Services and Telegram Radio/Mastercable Navigation Services.

According to (Adhitia et al., 2022) VTS Service is the monitoring of shipping traffic carried out by ports or shipping fleet management to ensure that shipping includes sea transportation, ports, shipping safety and security, as well as maritime environmental protection, and is part of a national transportation system that has this potential and role.

In the Type A Class I Tanjungpinang Navigation District, Mastercable is one of the Non-Tax State Revenues in the Type A Class I Tanjungpinang Navigation District. Mastercable is news/wires sent by the ship's captain about the estimated arrival of the ship at the port (Prakoso et al., 2024). The news contains the name of the ship, call sign, length and width of the ship, ship draft, ship position, departure port and destination port, type of cargo carried, and estimated time of arrival of the ship (An, 2015).

Table 1. Recapitulation of Non-Tax State Revenues of Navigation District Type A Class I Tanjungpinang

Year	VTS Service Provider	<i>Mastercable</i>	Total
2020	Rp. 6,969,535,191	Rp. 328,693,992	Rp. 7,298,229,183
2021	Rp. 6,916,398,017	Rp. 339,212,080	Rp. 7,255,610,097
2022	Rp. 8,433,177,330	Rp. 436,917,450	Rp. 8,870,094,780

Source: Class I Type A Navigation District Tanjungpinang

In the Class I Tanjungpinang Type A Navigation District, the source of Non-Tax State Revenue (PNBP) comes from Vessel Traffic Service (VTS) and Mastercable services. Non-Tax State Revenue (PNBP) in 2020 amounted to Rp. 7,298,229,183 with a value of Vessel Traffic Service (VTS) service revenue of Rp. 6,969,535,191 and a Mastercable value of Rp. 328,693,992. Non-Tax State Revenue (PNBP) in 2021 amounted to Rp. 7,255,610,097 with a value of Vessel Traffic Service (VTS) service revenue of Rp. 6,916,398,017 and a Mastercable value of Rp. 339,212,080. Non-Tax State Revenue (PNBP) in 2022 amounted to Rp. 8,870,094,780 with the value of receiving Vessel Traffic Service (VTS) services of Rp. 8,433,177,330 and the value of Mastercable of Rp. 436,917,450.

Based on the data above, it can be seen and understood that the Non-Tax State Revenue (PNBP) received from navigation services has experienced very significant fluctuations in 2020 and 2021, but in 2022 there was a significant increase. Therefore, the author is interested in conducting research on **"The Influence of VTS and Mastercable Services on PNBP in the Class I Tanjungpinang Navigation District"**.

Based on the above background, the following problem formulation can be taken:

1. Does the Vessel Traffic Service (VTS) have an effect on Non-Tax State Revenue (PNBP) at the Type A Navigation District Office Class I Tanjungpinang?.
2. Does Mastercable have an effect on Non-Tax State Revenue (PNBP) at the Type A Navigation District Office Class I Tanjungpinang?.
3. Does Vessel Traffic Service (VTS) and Mastercable Services affect Non-Tax State Revenue (PNBP) at the Tanjungpinang Class I Type A Navigation District Office?

METHOD

Types of research

This study employs a quantitative research approach, characterized by the use of numerical data and statistical analysis to interpret the results (Alamsyahbana et al., 2023). Quantitative research methods are a form of research based on data collected during research systematically regarding

the facts and characteristics of the objects studied by combining the relationships between the variables involved in it, then interpreted based on theories and related literature (Sari & Sugiyono, 2016). This type of research takes its object of research at the Type A Class I Tanjungpinang Navigation District Office. This study aims to determine the effect of Vessel Traffic Service (VTS) and Mastercable Services on Non-Tax State Revenue (PNBP) at the Type A Class I Tanjungpinang Navigation District Office.

Data Types

The type of data used in this study is secondary data. According to Indriantoro and Supomo (2014) in (Windy & Subardjo, 2023) Secondary data refers to information collected by researchers indirectly, typically through intermediary sources. This type of data is usually gathered and documented by other parties and can include forms such as evidence, records, or historical reports found in archives—both published and unpublished (Sujarweni, 2020). Secondary data is data obtained indirectly from its source, such as activity reports or administrative documents related to the 2020 to 2022 Non-Tax State Revenue Report (PNBP) and the profile of the Tanjungpinang Class I Type A Navigation District.

Population and Sample

According to (Sugiyono, 2017), a population refers to a collection of objects or subjects that possess specific attributes and traits identified by researchers for the purpose of study and analysis. In this research, the population comprises the records of Non-Tax State Revenue (PNBP) from the Type A Class I Navigation District in Tanjungpinang

A sample is a part of the number or characteristics possessed by a population (Bahri, 2018). If the population in the study is very large, it is impossible for the researcher to study the entire population (Jaya, 2021). The sample in this study is the Recapitulation of Non-Tax State Revenue (PNBP) of the Type A Class I Tanjungpinang Navigation District for 2020 to 2022.

Data Analysis Techniques

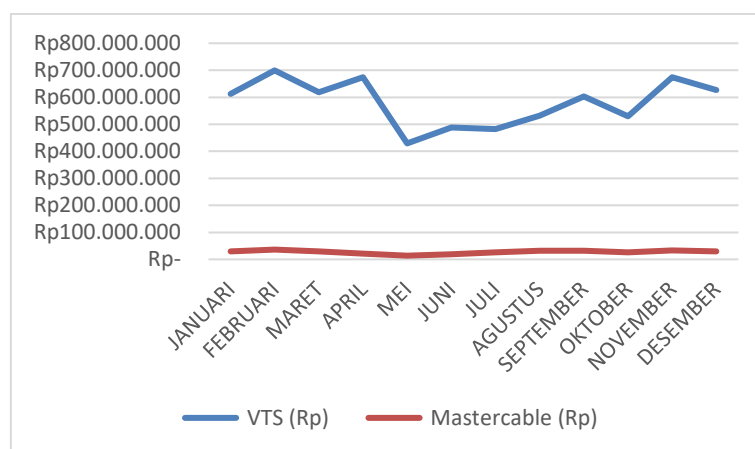
The data analysis technique in this study used Eviews software version 12. Eviews software version 12 is a computer program used to process statistical data and econometric data in the form of time series (Sugiyono, 2022).

RESULT AND DISCUSSION

Data Presentation

This study uses secondary data samples (time series) for 3 years, starting from 2020 to 2022. The data collection method in this study is by directly observing the research object, namely the Tanjungpinang Class I Type A Navigation District Office.

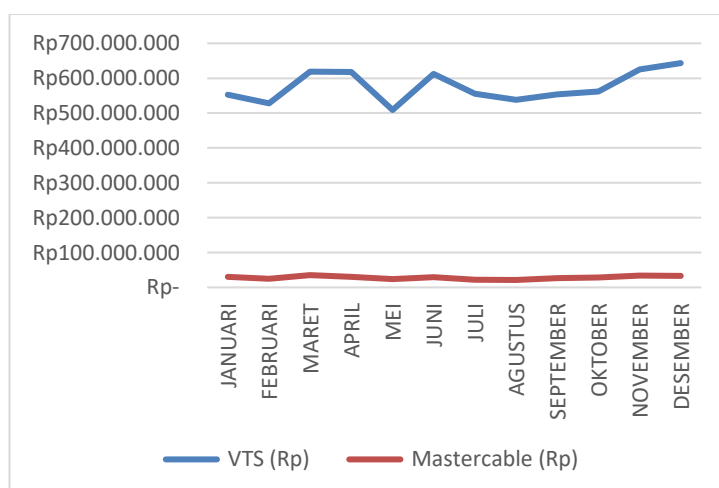
Figure 1. Recapitulation of Non-Tax State Revenue from the Navigation District Office Type A Class I Tanjungpinang 2020.



Source: Class I Type A Navigation District Tanjungpinang

Based on the data in Figure 1 obtained from the Type A Class I Tanjungpinang Navigation District, it shows that in 2020 the highest receipt of Vessel Traffic Service (VTS) Services occurred in February with a value of Rp. 699,585,017. While the highest receipt of Mastercable also occurred in February with a value of Rp. 36,147,608.

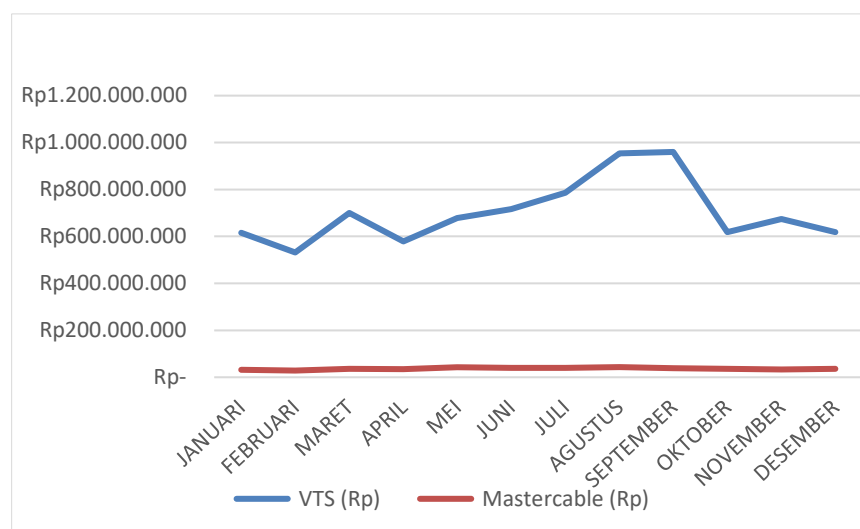
Picture 2. Recapitulation of Non-Tax State Revenue of Navigation District Office Type A Class I Tanjungpinang 2021



Source: Class I Type A Navigation District Tanjungpinang

Based on the data in Figure 2 obtained from the Class I Type A Navigation District Tanjungpinang, Shows that in 2021 the highest receipt of Vessel Traffic Service (VTS) Services occurred in December with a value of Rp. 643,298,050. While the highest receipt of Mastercable occurred in November with a value of Rp. 33,687,405.

Picture 1. Recapitulation of Non-Tax State Revenue of Navigation District Office Type A Class I Tanjungpinang 2022



Source: Class I Type A Navigation District Tanjungpinang

Based on data obtained from the Class I Type A Navigation District Tanjungpinang, Shows that in 2022 the highest receipt of Vessel Traffic Service (VTS) Services occurred in September with a value of Rp. 959,995,087. While the highest receipt of Mastercable occurred in August with a value of Rp. 43,314,588.

Descriptive Analysis

Table 2. Descriptive Statistics

	PNBP	VTS	MC
Mean	20.27940	20.20332	17.14277
Maximum	20.72155	20.68244	17.58400
Minimum	19.90918	19.23323	16.43168
Std. Dev.	0.167271	0.235480	0.209363
Observations	36	36	36

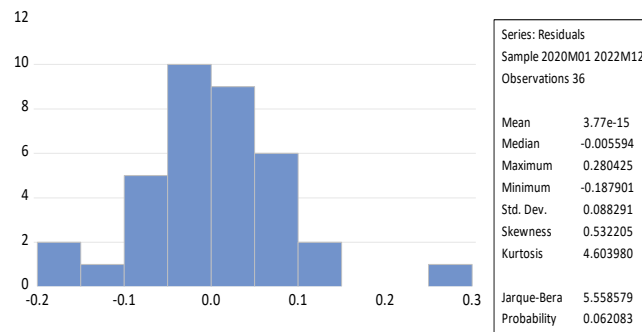
Source: Secondary data processed with Eviews 12 (2024)

- The Vessel Traffic Service (VTS) Service Variable (X1) has a minimum value of 19,233 in May 2020, while the maximum value is 20,682 in September 2022 and has an average value of 20,203 and a standard deviation value of 0.235.
- The Mastercable variable (X2) has a minimum value of 16,431 in May 2020, while the maximum value is 17,584 in August 2022 and has an average value of 17,142 and a standard deviation value of 0.209.
- The Non-Tax State Revenue (PNBP) variable (Y) has a minimum value of 19,909 in January 2020, while the maximum value is 20,721 in September and has an average value of 20,279 and a standard deviation value of 0.167.

Classical Assumption Test

Normality Test

Picture 4 Normality Test



Source: Secondary data processed with Eviews 12 (2024)

Based on the results of the normality test in Figure 4, it shows that the Jarque-Bera probability value is $0.06 > 0.05$, so the residual value is normally distributed and the regression analysis is suitable for use.

Multicollinearity Test

Table 3 Multicollinearity Test

	VTS	<i>Mastercable</i>
VTS	1,000,000	0.386653
<i>Mastercable</i>	0.386653	1,000,000

Source: Secondary data processed with Eviews 12 (2024)

From the results of the multicollinearity test in table 3, it can be seen that the correlation between Vessel Traffic Service (VTS) and Mastercable is 0.38. There is no correlation between independent variables that is high above 0.90. So it can be concluded that there is no multicollinearity between independent variables.

Heteroscedasticity Test

Table 4. Heteroscedasticity Test

<i>F-statistic</i>	5.593549	<i>Prob.</i>	0.0081
		<i>F(2,33)</i>	
<i>Obs*R-squared</i>	9.114325	<i>Chi-Square</i>	0.0105
		<i>Prob.</i>	
<i>Scaled explained</i>	3.863939	<i>Chi-Square</i>	0.1449

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<i>SS</i>	<i>Prob.(2)</i>
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Source: Secondary data processed with Eviews 12 (2024)

In this study, the white test was conducted on the heteroscedasticity test. Table 4 shows that the prob-chi-square value is 0.0105. It can be concluded that H0 is accepted and H1 is rejected, which indicates that the data regression model does not have symptoms of heteroscedasticity.

Autocorrelation Test

Table 5. Autocorrelation Test

<i>R-squared</i>	<i>Adjusted R-Squared</i>	<i>Std. Error of the stimate</i>	<i>Durbin Watson</i>
0.721396	0.704511	0.090927	1.099410

Source: Secondary data processed with Eviews 12 (2024)

Based on the results of the autocorrelation test in table 4.7, it can be seen that the Durbin Watson value of 1.099410 is between -2 and +2, so it can be concluded that there is no autocorrelation symptom in the research model.

Multiple Linear Regression Analysis

Table 6. Multiple Linear Regression

<i>Variables</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-Statistic</i>	<i>Prob.</i>
	5.975080	1.548535	3.858537	0.000
C				5
	0.361730	0.070773	5.111133	0.000
VTS				0
	0.408112	0.079601	5.126944	0.000
MC				0

Source: Secondary data processed with Eviews 12 (2024)

Based on table 6, the regression equation model in this study is: $PNBP = 5.975080 + 0.361730 \text{ VTS} + 0.408112 \text{ MC}$

The equation means

- The Alpha value is 5.975080, meaning that if the Vessel Traffic Service (VTS) and Mastercable Services are increased, the PNBP of the Type A Class I Tanjungpinang Navigation District will increase by 5.975080.
- The coefficient value of Vessel Traffic Service (VTS) is 0.361730, it can be said that every 1 unit increase in Vessel Traffic Service (VTS) will increase Non-Tax State Revenue (PNBP) by 0.361730 units assuming other independent variables are considered constant.

- c. The Mastercable coefficient value is 0.408112, it can be said that every 1 unit increase in Mastercable will increase Non-Tax State Revenue (PNBP) by 0.408112 units assuming other independent variables are considered constant.

Hypothesis Testing

Partial Test (T-Test)

Table 7. T-Test (Partial)

Variable	Coefficien	Std.		Prob.
	t	Error	t-Statistic	
C	5.975080	1.548535	3.858537	0.000
				5
VTS	0.361730	0.070773	5.111133	0.000
				0
MC	0.408112	0.079601	5.126944	0.000
				0

Source: Secondary data processed with Eviews 12 (2024)

Based on the results of data processing in table 7, it can be seen that the Vessel Traffic Service (VTS) Service variable has a t-statistic value of 5.111133 and a probability value of 0.0000. At a significant level of $\alpha = 0.05$, a t-table value of 1.69236 is obtained, the absolute value of the t-statistic > t-table (5.111 > 1.692) and prob. Sig > 0.05 (0.00 < 0.05) so that H1 is accepted. These results indicate that the Vessel Traffic Service (VTS) Service variable has a significant effect and is positively related to the growth of Non-Tax State Revenue (PNBP) in the Class I Type A Navigation District of Tanjungpinang.

The Mastercable variable has a t-statistic value of 5.126944 and a probability value of 0.0000. At a significant level of $\alpha = 0.05$, a t-table value of 1.69236 is obtained. Thus, the absolute value of the t-statistic > t-table (5.126 > 1.692) and prob. Sig > 0.05 (0.00 < 0.05) so that H2 is Accepted, These results indicate that the Mastercable variable has a significant effect and is positively related to the growth of Non-Tax State Revenue (PNBP) in the Type A Class I Navigation District of Tanjungpinang.

Simultaneous Test (F Test)

Table 8. F Test (Simultaneous)

R-squared	0.721396	Mean dependent variable	20.27940
Adjusted R-squared	0.704511	SD dependent var	0.167271
	0.090927	Akaike information criterion	-1.877869
SE of regression		Black criterion	-1.745909
Sum squared residual	0.272834	Hannan-Quinn critter.	-1.831811
Log likelihood	36.80164	Durbin-Watson stat	1.099410
F-statistic	42.72389		
Prob(F-statistic)	0.000000		

Source: Secondary data processed with Eviews 12 (2024)

Based on the results of the F test in table 8, it shows that the F-statistic value is 42.72389 and the probability value is 0.000000. It can be seen that the F-statistic value > F-table (42.72 > 3.28) and prob. Sig < 0.05 (0.00 < 0.05). Thus, H₀ is rejected, which means that the variables of Vessel Traffic Service (VTS) and Mastercable together have a significant effect on the growth of Non-Tax State Revenue (PNBP) in the Class I Type A Navigation District of Tanjungpinang.

TestCoefficient of Determination (R²)

Table 9 Test of Determination Coefficient (R2)

R-squared	0.721396	Mean dependent variable	20.27940
Adjusted R-squared	0.704511	SD dependent var	0.167271
	0.090927	Akaike information criterion	-1.877869
SE of regression		Black criterion	-1.745909
Sum squared residual	0.272834	Hannan-Quinn critter.	-1.831811
Log likelihood	36.80164	Durbin-Watson stat	1.099410
F-statistic	42.72389		
Prob(F-statistic)	0.000000		

Source: Secondary data processed with Eviews 12 (2024)

Based on table 9 above, it shows that the coefficient of determination (Adjusted R-squared) is 0.704511, this means that 70.45% of the growth in Non-Tax State Revenue (PNBP) in the Type A Class I Tanjungpinang Navigation District is influenced by Vessel Traffic Service (VTS) and Mastercable Services, the remaining 29.55% is the influence of other variables that are not included in the regression model of this study. Thus, the Adjusted R-Square value of 70.45% shows a value that is almost close to 100%, so that the estimated linear regression equation model is a fairly good model.

The Influence of Vessel Traffic Service (VTS) Services on Non-Tax State Revenue (PNBP)

The first hypothesis in this study is that Vessel Traffic Service (VTS) has a positive effect on Non-Tax State Revenue (PNBP). The results of this test show that Vessel Traffic Service (VTS) has a t-statistic value of 5.111133 and a probability value of 0.0000. At a significant level of $\alpha = 0.05$, a t-table value of 1.69236 is obtained, the absolute value of t-statistic > t-table ($5.111 > 1.692$) and prob. Sig > 0.05 ($0.00 < 0.05$) so that H1 is accepted. These results indicate that the Vessel Traffic Service (VTS) service variable has a significant positive effect on the growth of Non-Tax State Revenue (PNBP) in the Type A Class I Tanjungpinang Navigation District.

Results This study also provides an overview that Vessel Traffic Service (VTS) Services have a positive relationship with Non-Tax State Revenue (PNBP) in the Tanjungpinang Class I Type A Navigation District. The more the employees of the Tanjungpinang Class I Type A Navigation District improve the Vessel Traffic Service (VTS) Services, the more it will increase Non-Tax Revenue at the Tanjungpinang Class I Type A Navigation District Office. Good service can also help increase customer satisfaction, loyalty, and business returns. By improving the Vessel Traffic Service (VTS) Services, it will reduce the consequences of ships from incidents and prevent an incident from developing into a major accident in the area. The results of this study are in accordance with the research conducted by Darmono, 2022. The study stated that the Service Variable has a positive effect on Non-Tax State Revenue (PNBP) at the Tanjung Redeb Class II Port Organization Unit Office.

Mastercable's Influence on Non-Tax State Revenue (PNBP)

The second hypothesis in this study is that Mastercable has a positive effect on Non-Tax State Revenue (PNBP). The results of this test show that Mastercable has a t-statistic value of 5.126944 and a probability value of 0.0000. At a significant level of $\alpha = 0.05$, a t-table value of 1.69236 is obtained. Thus, the absolute value of the t-statistic > t-table ($5.126 > 1.692$) and prob. Sig > 0.05 ($0.00 < 0.05$) so that H2 is Accepted, These results indicate that the Mastercable variable has a significant positive effect on the growth of Non-Tax State Revenue (PNBP) in the Type A Class I Tanjungpinang Navigation District.

Results This study provides an overview that Mastercable has a positive relationship with Non-Tax State Revenue (PNBP) in the Tanjungpinang Class I Type A Navigation District. Currently, many ships often do not report when sailing. This can cause Non-Tax State Revenue (PNBP) to decrease further. Therefore, the more the employees of the Tanjungpinang Class I Type A Navigation District improve Mastercable services, the more it will increase Non-Tax Revenue at the Tanjungpinang Class I Type A Navigation District Office. The results of this study are in accordance with the research conducted by Zulyani, 2018. The study stated that Mastercable Radio Telegram has a significant positive effect on Non-Tax State Revenue (PNBP) of the Senayang Class III Navigation District.

The Influence of Vessel Traffic Service (VTS) and Mastercable Services on Non-Tax State Revenue (PNBP)

Based on the results of the F test, the F-statistic value is 42.72389 and the probability value is 0.00000. It can be seen that the F-Statistic value > F-table ($42.72 > 3.28$) and prob. Sig < 0.05 (0.00 < 0.05). Thus, H_0 is rejected H_3 is accepted which means that the variables of Vessel Traffic Service (VTS) and Mastercable Services together have a significant effect on the growth of Non-Tax State Revenue (PNBP) in the Class I Type A Navigation District of Tanjungpinang.

The value of R^2 is 0.704511, this means that 70.45% of the growth in Non-Tax State Revenue (PNBP) in the Type A Class I Tanjungpinang Navigation District is influenced by Vessel Traffic Service (VTS) and Mastercable Services, the remaining 29.55% is the influence of other variables not included in this study.

CONCLUSION

Based on the results of research and discussion of the Influence of Vessel Traffic Service (VTS) and Mastercable Services on Non-Tax State Revenue (PNBP) at the Type A Class I Tanjungpinang Navigation District Office in 2020 to 2022, the following conclusions can be drawn:

1. Vessel Traffic Service (VTS) services have a significant effect on the growth of Non-Tax State Revenue (PNBP) in the Type A Class I Tanjungpinang Navigation District. The results of this study provide an overview that Vessel Traffic Service (VTS) services have a positive relationship with Non-Tax State Revenue (PNBP) in the Type A Class I Tanjungpinang Navigation District. The more the employees of the Type A Class I Tanjungpinang Navigation District improve the Vessel Traffic Service (VTS) services, the more it will increase Non-Tax Revenue at the Type A Class I Tanjungpinang Navigation District Office.
2. Mastercable significantly influence the growth of Non-Tax State Revenue (PNBP) in the Type A Class I Tanjungpinang Navigation District. The results of this study provide an overview that Mastercable has a positive relationship with Non-Tax State Revenue (PNBP) in the Type A Class I Tanjungpinang Navigation District. The more the employees of the Type A Class I Tanjungpinang Navigation District improve Mastercable services, the more it will increase Non-Tax Revenue at the Type A Class I Tanjungpinang Navigation District Office.
3. Vessel Traffic Service (VTS) and Mastercable services together have a significant effect on the growth of Non-Tax State Revenue (PNBP) in the Type A Class I Tanjungpinang Navigation District. This is proven by the F-statistic value being greater than the F-table and the significant value being greater than the probability value.

Based on the results of research and discussion of the Influence of Vessel Traffic Service (VTS) and Mastercable Services on Non-Tax State Revenue (PNBP) at the Type A Class I Tanjungpinang Navigation District Office in 2020 to 2022, the following suggestions can be submitted:

1. The government through related agencies is advised to develop digital-based service innovations on the VTS and Mastercable systems to improve operational efficiency and optimize PNBP. In addition, the integration of information systems between agencies that handle ship traffic data and maritime communication can strengthen the accuracy of PNBP calculation and reporting
2. Further research is suggested to include information technology variables and human resource competencies, considering that both play an important role in the effectiveness of the management of VTS and Mastercable services.

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