The Influence of COVID-19 and Other Determinants on Bogor City's Local Revenue

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ABSTRACT

One manifestation of the successful implementation of regional autonomy is marked by the existence of regional independence in generating funds obtained from the maximum utilization of regional potential which is called LocalRevenue (PAD). The high realization of PAD reflects the large capacity of the region to finance government and development. This study aims to analyze the growth of PAD annually, the level of income contribution of PAD compilers, effectiveness, and influence of COVID-19 and other determinants on PAD. The method used is descriptiveanalysis, contribution, effectiveness, and multiple linear regression with dummy variable. The object under study is Bogor City, using annual and monthly time series data for the January-December 2018-2021 period. The results of this study indicate that PAD is influenced negatively by Population (JP), PAD is influenced positively by the Local Tax (PD), Inflation (IN), and Other Legitimate Local Revenue (LLPADS). While PAD is not influenced by the Regional Retribution (RD), Results of Separated Regional Wealth Management (HPKDD), Entertainment Tax (PHi), Number of Hotel Business Units (JHo), and COVID-19.

Keywords: Bogor City, COVID-19, Dummy Variable, Local Revenue, Multiple Linear Regression.

I. INTRODUCTION

The success of state development is determined based on the success of each region in it, especially those that have been given the authority to carry out regional autonomy, which means the transfer of government authority by the central government to autonomous regions, to regulate and manage government affairs in the system of the Unitary State of the Republic of Indonesia [1]. It is because the central government gives authority to local governments to regulate their respective territories.

The fiscal decentralization policy expects the dependence of local governments on the central government to decrease so that they can achieve regional independence as the goal of regional autonomy itself [2]. Regional autonomy aims to improve public services, public welfare, and regional

competitiveness. The way to achieve this goal is to regulate all regional affairs, especially financial affairs. It is important because the relationship between central and regional finance greatly determines regional independence. It is crucial, and its availability needs to be increased because as a source of financing, the increase will accelerate the activities to achieve development goals [3]. If funds from the region itself can finance the development of a region, it can be said to be an ideal regional development [4].

This finance has been regulated based on [5], regional revenues is the amount of funds that enter the regional treasury is in the form of regional income and financing receipts. With the high realization of regional income, it is hoped that the government system will run well. Regional income in Bogor City is dominated by the contribution of regional income from three sources of income, including Local Revenue (PAD), Balancing Funds, and Other Regional Original Income.

Local Revenue (PAD) is the revenue obtained by a region from various types of income in it and at the same time becomes a source of regional original economy that is cultivated by its region. According to [6], PAD growth must be rise quickly and precisely because its growth will always increase following the lifestyle of the local population. Data shows that from 2018-2021 PAD has a relatively significant contribution to regional income, with an average of 39.17% in the last four years [7]. With the setting of targets, it is hoped that the realization can achieve these targets.

TABLE 1. Regional Income and Local Revenue of Bogor City in 2018- 2021

Year	Regional Income (Trillion Rupiah)	Target of Local Revenue (Billion Rupiah)	Realizationof Local Revenue (Billion Rupiah)
2018	2.32	887.39	912.19
2019	2.49	972.60	1015.86
2020	2.42	741.53	872.01
2021	2.65	914.55	1083.59

The development of PAD in Bogor City always reaches the target annually. It is accompanied by an increase except in 2020, where the target and realization of PAD have decreased compared to the previous year. It is directly proportional to the amount of regional income earned and also reduced. The contribution of PAD this year is the lowest compared to the other three years, which is only 35.9%. However, there was a rapid increase in 2021, and even the realization achieved was higher than in 2019.

The correlation between the amount of PAD and the income of Bogor City is directly proportional, indicating that the role of PAD is quite influential. With the authority to regulate their regions, each city/district can have different targets and achievements related to the realization obtained in PAD. Thus, the higher the PAD, the higher the ability of local governments to finance their own needs [8]. The increase in PAD is influenced by four types of income, namely local taxes, regional retribution, results of separated regional wealth management, and other legitimate local revenues [9].

Figure 1 shows that the four types of income in Bogor City's PAD experienced a fairly good increase in realization from 2018 to 2019 and from 2020 to 2021, in line with the increase in PAD. However, in the following year, when PAD decreased by 14.1% (decreased by Rp 143,850,789,060 in 2020), it was also followed by a decrease in local taxes of Rp 180,456,435,538 and regional retribution of Rp 16,351,777,933 while HPKDD increased by Rp 3,685,448,881 and LLPADS increased by Rp 51,383,990,311 [10]. Bogor City can further revive its economy, marked by an increase of 24.2 % in 2021, and this increase is greater than in 2018 to 2019, which was only 11.3%.
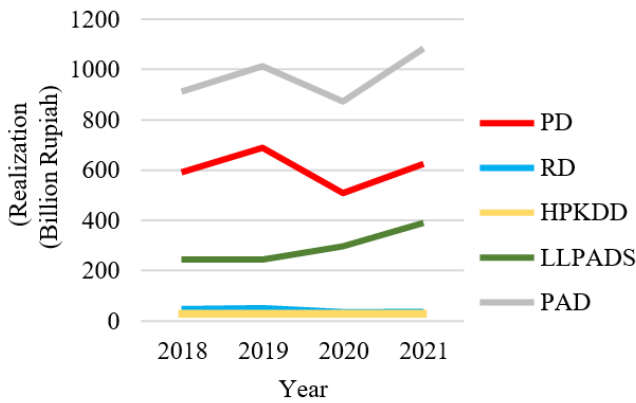
Figure 1. Realization of Bogor City's Local Revenue and the four types of income in it in 2018-2021

The high amount of PAD obtained can reflect the success of a region in financing governance and development. But on the other hand, if the realization is not as expected, this can be a considerable risk, especially considering that in 2020 and 2021, the world is being hit by the COVID-19 outbreak. This extraordinary event that has been experienced since the end of 2019 started with a virus in Wuhan, the capital of Hubei Province, China, which spread massively so that the pandemic continues to this day and has attacked all countries in the world, including Indonesia since early 2020. As a result of this pandemic, Bogor City enforced the PSBB (Large-Scale Social Restrictions) policy which aims to break the chain of the spread of the COVID-19 virus.

One of the sectors affected by this pandemic is the economic's sector, which has temporarily closed entertainment centers, hotels, and restaurants. Likewise, the number of fatalities due to infectious diseases is swift and is also marked by inflation which affects the prices of goods and the income of entrepreneurs. The influence of the economic sector, both in terms of human resources as an economic driver and other indicators, will harm economic movement, which is hampered.

In a pandemic condition and with various government policies, Bogor City still has to maximize PAD which

is very dependent on the four types of income in it and also other determinants that affect it, because if PAD is not increased by utilizing the existing regional potential by the local revenue, then COVID-19 will affect the situation[11]. Based on the basic formulation of the problem above, this research aims to:

1. Explain the comparison of Bogor City's PAD in conditions before and during COVID-19.

2. Analyze the effectiveness of PAD and the four types of income in it, as well as the amount of contribution to PAD of Bogor City in conditions before and during COVID-19.

3. Analyzing the influence of COVID-19 and other determinants of PAD of Bogor City.

II. METHODS AND MATERIAL

A. MATERIAL

This study uses secondary time series data in the form of annual data and also monthly data from January to December 2018-2021, which is a total of 48 periods with the consideration that this year is the condition before and during the COVID-19 pandemic in Indonesia, and the object being analyzed is Bogor City.

There is one dependent variable (PAD), eight independent variables (PD, RD, HPKDD, LLPADS, Inflation, Population, PHi, JHo), and one categorical variable, namely a dummy variable which is divided into two conditions (before and during the COVID-19 pandemic). This data was obtained through the Bogor City Revenue Realization Report, the Recap on the Development of the Number of Bogor City Taxpayers, the Bogor City Population and Civil Registration Office, and Central Statistics Agency (BPS) of Bogor City.

B. METHOD

In this study, four methods were used, namely descriptive analysis, effectiveness analysis, contribution analysis, and multiple linear regression analysis (with dummy variable). In all types of analysis, all data processing uses Microsoft Excel software, and for multiple linear regression analysis (with dummy variable) using STATA 2022 software. Descriptive analysis is a simple method of searching for related information and collecting data presented in sentences, graphs, tables, and images so that the reader can easily understand the information obtained. In this study, descriptive analysis was used to compare the Local Revenue of Bogor City before and during the COVID-19 pandemic, namely by calculating the decrease, increase, and growth of various types of income.

Effectiveness is the relationship between output and goals. It is describes the extent to which the expected results are compared with the planned results. When a realization matches the target, it can be said to be effective. In this study, the intended target and realization is local revenue and four types of income in it, namely local taxes (PD), regional retribution (RD), results of separated regional wealth management (HPKDD), and other legitimate local revenue (LLPADS). The effectiveness is meant by looking at the relationship between the realization of the five variables to the revenue target on an annual basis and seeing whether the amount does not reach the target or can exceed the predetermined target. The following formula can calculate this effectiveness:

$$\text{Effectiveness} = \frac{\text{Actual Revenue}}{\text{Target Revenue}} \times 100\%$$

The formula produces several answers regarding the amount of tax effectiveness, and these results also have five criteria [12] as follows:

TABLE 2. EFFECTIVENESS MEASUREMENT INDICATORS

Percentage (%)	Criteria
<60%	Ineffective
60%-80%	Less Effective
80%-90%	Quite Effective
90%-100%	Effective
>100%	Highly Effective

Contribution analysis is used to determine the magnitude of the involvement of four types of income in Local Revenue using monthly and annual data with the following formula with K as the contribution calculated by dividing P, namely the realization of I (various types of income in local revenue, namely PD, RD, HPKDD, and LLPADS), to the realization of local revenue whose results are multiplied by 100% with n is the period (monthly and yearly). The formula that can be used is as follows:

$$KI_n = \frac{P_{In}}{PAD_n} \times 100\%$$

The formula produces several answers regarding the amount of contribution, and these results also have six criteria [13] as follows:

TABLE 3. CONTRIBUTION CRITERIA CLASSIFICATION

Percentage (%)	Criteria
0.00%-10%	Very less
10.10%-20%	Not enough
20.10%-30%	Currently
30.10%-40%	Pretty good
40.10%-50%	Well
>50%	Very good

Multiple linear regression analysis is an analysis that can only be used on an interval and ratio scale, which is presented in the form of an equation model. The regression equation consists of one dependent variable and many independent variables [14]. This analysis aims to determine the effect of several independent variables on one dependent variable. To find out the relationship between variables can be presented in the following mathematical equation:

$$\ln PAD = \beta_0 + \beta_1 \ln PD + \beta_2 \ln RD + \beta_3 \ln HPKDD$$
$$+ \beta_4 \ln LLPADS + \beta_5 \ln JP + \beta_6 IN$$
$$+ \beta_7 \ln PHi + \beta_8 \ln JHo + \beta_9 D1 + \varepsilon$$

Information:

PAD : Local Revenue (Rp)
PD : Local Tax (Rp)

RD : Regional Retribution (Rp)

HPKDD : Results of Separated Regional WealthManagement (Rp)

LLPADS: Other Legitimate Local Revenue (Rp)
JP : Total Population (Individual)

IN : Inflation (%)

Phi : Entertainment Tax (Rp)

JHo : Number of hotel business units (Units)

β : Coefficient/intercept

D1 : Dummy; 0=Before COVID-19;1=During COVID-19

ε_{it} : Error term

This regressed model uses a natural logarithmic variable, both the dependent variable and the independent variable,except for inflation because it is in percent (%). In this regression equation model, exact test results are needed in the estimation, with unbiased and consistent results. But before, some tests are required, namely the Hypothesis Testing and Classical Linear Regression Model Assumption Test.

The hypothesis test consists of three types, namely the coefficient of determination, the F statistical test, and the T statistical test.

The coefficient of determination (R^2) was carried out by looking at the value of R^2 to find out how much the ability of all independent variables to explain the variance of the dependent variable. The result is obtained by dividing RSS (Regression Sum Square) by TSS (Total Sum ofSquare). The final results provide a range of R^2 values ranging from 0-1 (100%) or other calculations obtained from the results of R^2 contained in the multiple linear regression analysis in the ANOVA (Analysis of Variance)table.

The F statistical test is a model feasibility test (goodness of fit) conducted to determine whether the independent variables simultaneously influence the dependent variable or not. The steps taken are by formulating the following hypothesis:

H_0: $\beta_1 = \beta_2 = \dots = \beta_n$

H_1: at least one value $\beta \neq 0$

Based on two hypotheses, it can be considered with the results of the F statistical test, which can be seen based onthe F-Table or compared with the probability of F statisticwith (significant level) 5%.

While the t-test is also known as the partial correlation test, which aims to determine whether each independentvariable influence the dependent variable or not. Thesteps taken are by formulating the following hypothesis: H_0: $\beta = \beta_0$ (the independent variable (x_i) has no significanteffect on the dependent variable (y))

H_1: $\beta \neq \beta_0$ (the independent variable (x_i) has a significanteffect on the dependent variable (y))

These two hypotheses can be considered with the results of the T statistical test, which can be seen from the T- Table where the t value in df n-k and the whole level for the one-tailed test and /2 for the two-tailed test, or it can also be analyzed based on the results of

the partial correlation of the significance value obtained are significant (value less than 5% significance level) or insignificant (value greater than 5% significance level).

The next step is to test the assumptions of the classical linear regression model with the aim that the prediction model produced is in accordance with the Gauss-Markov conditions, namely:

1. $E\{\varepsilon i\} = 0$, $i = 1,\dots, N$ zero mean
2. $V\{\varepsilon i\} =$, $i = 1,\dots, N$ homoscedasticity
3. $Cov \{\varepsilon_i, \varepsilon_j\} = 0$, $i = 1,\dots, N$ for $i \neq i$ no autocorrelation

An additional condition does not include the Gauss-Markov assumption, there is no perfect correlation between independent variables (no perfect multicollinearity). Multicollinearity is not calculated by testing the hypothesis related to the error component but by the rule of thumb, which only detects a linear relationship between independent variables, which usually uses linear correlation.

The existence of multicollinearity between independent variables does not make the regression model violate the OLS (Ordinary Least Square) assumption, meaning that the obtained model remains BLUE (Best Linear Unbiased Estimation). However, it can still complicate regression modeling because if there is multicollinearity, there will be a change in the sign of the regression coefficient so that it becomes more difficult to interpret and tends to be insignificant because it will result in the standard deviation of the coefficients increasing so that the t value will decrease and tend to be difficult to reject H0. The thing that should not happen is perfect multicollinearity where the linear correlation is between -1 and 1, then the estimation of the regression model is not possible.

Thus, the solution that can be done is to exclude one of the independent variables that are perfectly correlated in the model or by remove the independent variable, which has a large VIF (Variance Inflation Factor) value that exceeds the rule of thumb. If a variable has a VIF value > 5, it indicates a multicollinearity problem in the model [15].

Heteroscedasticity is a condition where the error variance is not the same for each observation. The way to detect it is to look at the graph/plot and White Test hypothesis. The graph/plot shows the relationship between the squared residuals and the estimated y. If the results show that the data distribution is relatively wide and has the same width from left to right, then there is no indication of heteroscedasticity and vice versa. This conclusion should be accompanied by a heteroscedasticity assumption test, namely the White Test. Two hypotheses, namely H0 and H1, are analyzed based on the p-value obtained if it is greater than (significant level) 5%, then do not reject H0 where the number is insignificant, so there is no indication of heteroscedasticity, and vice versa. If the results indicate heteroscedasticity, the next step is needed to overcome this problem, namely by transforming the variable into log form.

One of the assumptions of regression modeling using the OLS method, which is a Gauss-Markov condition, is that there is no autocorrelation between the residuals. In time- series data, it can detect the correlation of data between time (before and after). It can be seen from the pattern formed on the graph/plot between the residual and the lag of the residual because the data used is time-series data. Other tests can also be done using the Durbin Watson Test, which will produce statistical values between 0-4, which will later be compared with the critical value from the Durbin Watson table.

The results obtained can be grouped into five regions. It can be said whether the model contains positive autocorrelation (between 0 to dL), free from autocorrelation (between dL to dU, dU to 4-dU, and 4-dU to 4-dL, or negative autocorrelation (between 4-dL to 4) with dU and dL values obtained from the Durbin

Watson table. However, the weakness of the Durbin Watson test is that it cannot use the lag variable on the model, so the Breusch-Godfrey test can be used. The results are that if the p-value is more than 5%, it does not reject H0, so there is no indication of autocorrelation and vice versa.

III. RESULTS AND DISCUSSION

A. Comparison of Bogor City's Original Regional Income in the Period Before and During the COVID-19 Pandemic.

The realization of the four types of income in PAD experiences fluctuating numbers annually, but the realization always increases both in 2018-2019 (before the COVID-19 pandemic) also in 2020-2021 (during the COVID-19 pandemic). All types of income are progressing which is improving annually. Table 4 shows the realization of PAD in 2018 of Rp 912,197,971,288 successfully reaching the predetermined target of Rp 887,396,041,682. In the following year, namely in 2019, the realization of PAD in Bogor City of Rp 1,013,756,016,431 also succeeded in exceeding the predetermined target of Rp 914,550,650,320 [16]. The increase that occurred in 2019 was caused by the rise in all types of local taxes (except groundwater taxes), general service fees, business service fees, returns on equity participation in PDAMs and BPRs, demand deposits receipts, income for work execution fines, tax penalties, income BLUD, and JKN capitation income.

TABLE 4

REALIZATION OF FOUR TYPES INCOME IN THE LOCAL REVENUE OF BOGOR CITY IN 2018-2021

Year	PD (Billion Rupiah)	RD (Billion Rupiah)	HPKDD (Billion Rupiah)	LLPADS (Billion Rupiah)
2018	592.97	48.41	26.77	244.02
2019	689.49	51.36	28.24	244.65
2020	509.03	35.01	31.92	296.04
2021	624.78	36.03	32.42	380.35

At the beginning of the COVID-19 outbreak, HPKDD increased by Rp 3,685,448,881 and LLPADS increased by Rp 51,383,990,311 while PD decreased drastically by Rp 180,456,435,538 and RD by Rp 16,351,777,933 in 2020 so that the realization of PAD also decreased compared to the previous year, which was a decrease of Rp 141,738,774,279. It happened due to the COVID-19 pandemic, which caused a lot of economic adjustments, including lowering targets and taking into account local capacity adjustments in terms of the realization of various types of income, because during the pandemic, the government implements the PSBB policy (Large-Scale Social Restrictions) so that economic activities are disrupted and resulting in the closure of various shopping centers as a source of the economy. At the same time, various business units that are the driving force of the economy, as well as people who have lost their jobs, their income is reduced, as a result, tax contributions and other mandatory contributions are diverted to meet the necessities of life first.

The decline that occurred in 2020 was due to a decrease in the realization of restaurant taxes (56.2 billion rupiahs), hotel taxes (45.6 billion rupiahs), BPHTB (24 billion rupiahs), entertainment taxes (22 billion rupiahs), PBB (19 billion rupiahs), parking tax (7.9 billion rupiahs), advertisement tax (2.8 billion rupiahs), street lighting tax (2 billion rupiahs), groundwater tax (1.6 billion rupiahs), certain licensing fees (-7 billion rupiahs), business service fees (-5 billion rupiahs), and general service fees (-4.2 billion rupiahs). While HPKDD, all incomes in it have increased, as well as LLPADS which increased because the revenue in them increased except for current account receipts, tax penalty income, results from the use of regional wealth, JKN capitation fund income, and the contributions from Bogor Botanical Gardens.

To strengthen the community's economy, incentives/stimulus are provided by reducing or eliminating local taxes and

regional retribution for business actors, including MSME to avoid a decline in production and mass layoffs [17]. This business operation in Bogor City causes restaurant, hotel, entertainment, and parking tax revenues decrease drastically. The stimulus provided by the government caused the realization of local taxes and regional retribution decrease in 2020 (Table 4).

There are various levels of PPKM, namely levels 1, 2, and 3 for the Java and Bali regions. Bogor City is included in the PPKM level 1, which meets the requirements of the World Health Organization (WHO) indicators so that Bogor City can implement new adjustments [18]. In 2021, the pandemic still occurred, and there were many economic adjustments, but there was a drastic increase in the following year with the PAD target increasing to Rp 914,550,650,320 with a realization of Rp 1,083,597,832,664. This increase in PAD became the largest realization in the last four periods. It is caused by four types of income in PAD that has increased, mainly PD and LLPADS, which dominate the amount of PAD. In 2021 the spread of COVID-19 had begun to decrease. It was not as severe as when it first appeared, so the economic sector started moving positively. Various business units have begun to reopen so that workers also have income that can be allocated for their daily needs and pay other mandatory dues.

Figure 2 shows that in 2019, all types of income experienced positive growth, with the largest percentage obtained by PD (16.28%), followed by the next order, namely RD (6.08%), HPKDD (0.26%), and LLPADS (0.26%), so that PAD experienced growth positively (11.13%). The growth of HPKDD and LLPADS in the following year experienced a rapid increase, with the largest number being LLPADS (21%) and second place being HPKDD (13.05%).
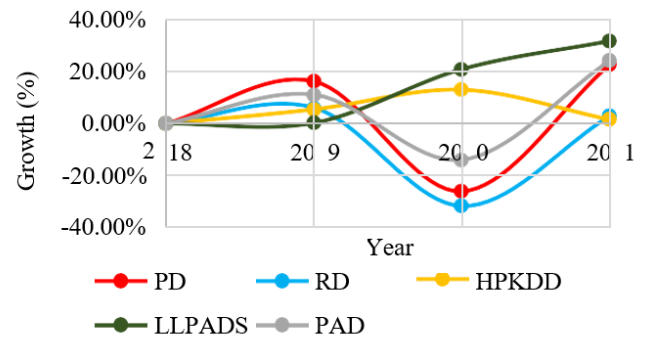

Figure 2. The growth of Bogor City's Local Revenue and four types of income in it in 2018-2021

The COVID-19 pandemic in early March 2020 in Indonesia resulted in PAD changes marked by negative growth in PD (-26.17%) and RD, which decreased dramatically (-31.84%), which resulted in PAD also experiencing negative growth (-13.98%) because these two incomes dominate the amount of PAD in 2020. Good developments can be seen in the following year (2021). Although there is still a pandemic, there is positive growth in all types of income, with the largest order being LLPADS (31.86%), PD (22.74%), RD (2.92%), and HPKDD (1.54%). This achievement indicates that even though there is a pandemic, the performance of Bogor City is still good, even experiencing an increase which is marked by the growth of PAD during the pandemic (24.26%), which was greater than before the pandemic (11.13%), even becoming the largest growth in the period the last four years.

B. Analysis of the Effectiveness of Bogor City's Local Revenue and the Four Types of Income in it in the Period Before and During the COVID-19 Pandemic Effectiveness is an analysis used to explain the extent to which the expected results are with the planned results. The greater the output contributed, the greater the effectiveness. When the realization of the income obtained contributes greatly to the predetermined target, the level of effectiveness is also large. In this study, the effectiveness level of the following five variables was calculated using annual data, namely the

Local Revenue (PAD), Local Taxes (PD), Regional Retribution (RD), Results of Separated Regional Wealth Management (HPKDD), and Other Legitimate Local Revenue (LLPADS) [16].

The amount of local tax realization is obtained from the accumulation of nine types of taxes, namely Hotel Tax, Restaurant Tax, Entertainment Tax, Advertising Tax, Street Lighting Tax, Parking Tax, Groundwater Tax, Rural & Urban Land and Building Tax (PBB-P2), and Land and Building Rights Acquisition Fee (BPHTB). Every year, the realization of local taxes always reaches the target even though the target set has decreased. In 2019, the government raised the local tax target (11.38%), increase around Rp 65,846,554,586. Compared to the realization, which experienced positive and larger growth, (16.28%), increase around Rp 96.517,157,422. This is due to an increase in the target of nine types of local taxes from 2018, as well as the realization which has increased except for the groundwater tax.

In 2020, as the initial period of the pandemic, the local tax target decreased due to the adjustment to COVID-19 conditions so that it experienced negative growth (-22.21%), decreased around Rp 125,600,000,000. It is comparable to the realization which also experienced negative growth but with a higher rate (-26.17%) decreased around Rp 180,456,435,538. This realization occupies the lowest position in the last four years. This is due to the decrease in the target and realization of all types of local taxes in it.

After one year of the pandemic, the government raised the local tax target again in 2021 (28.55%), increase around Rp 125,600,000,000 and has the same nominal as in 2019. It is comparable to the realization which also experienced positive growth but with a lower rate (only 22.74%) increased around Rp 115,745,417,399 compared to the previous year. But this realization has not succeeded in exceeding the local tax realization figure before COVID-19. This is due to the fact that

there are still many adjustments to economic conditions and the implementation of new policies due to the pandemic. The increase in targets was caused by all types of local taxes except parking water taxes and street lighting taxes, as well as the realization which increased except parking taxes and entertainment taxes.

TABLE 5. TARGET, REALIZATION, AND EFFECTIVENESS OF BOGOR CITY'S LOCAL TAX IN 2018-2021

Year	Target (Billion Rupiah)	Realization (Billion Rupiah)	Effectiveness (%)
2018	578.70	592.97	102.46
2019	565.60	689.49	121.90
2020	440.00	509.03	115.69
2021	565.60	624.78	110.46

Table 5 shows that the effectiveness of local tax variables in Bogor City in 2018-2021 is included in the "very effective" category because it is at a value greater than 100% and the calculation results of the effectiveness of local taxes are obtained with the highest order of 115.7 % in 2020, 110.5% in 2021, 106.9% in 2019, and 102.5% in 2018.

The amount of regional retribution realization is obtained from the accumulation of three types of income, namely general services, business services, and certain permits. The realization of the regional retribution exceeded the target but only happened twice, in 2018 and 2021. In 2019, the target increased (20.24%) around Rp 8,997,195,400 and comparable to the realization, which increased around Rp 2,944,082,877 but with a lower growth rate (only 6.08%). This is due to the increase in the target and realization of all types of regional retribution.

In 2020, as the initial period of the pandemic, the target for regional retributions decreased due to the adjustment to COVID-19 conditions so that they

experienced negative growth (-31.35%) around Rp 16,755,762,000. It is comparable to the realization which also experienced a negative growth (-31.84%) which fell around Rp 16,351,777,933 where this figure became the lowest realization in the last four years. This is due to the decrease in the target and realization of all types of regional retribution in it.

After one year of the pandemic, the government has lowered the target for regional retribution in 2021 (-13.85%), decreased around Rp 5,081,593,905. The realization in 2021 also experienced a positive growth (2.92%), increased around Rp 1,022,635,280. This is influenced by the declining target of public service retribution. Meanwhile, all realizations have increased, except for general service retribution.

TABLE 6. TARGET, REALIZATION, AND EFFECTIVENESS OF BOGOR CITY'S REGIONAL RETRIBUTION IN 2018-2021

Year	Target (Billion Rupiah)	Realization (Billion Rupiah)	Effectiveness (%)
2018	44.44	48.41	108.92
2019	53.44	51.36	96.09
2020	36.69	35.01	95.41
2021	31.60	36.03	113.99

Table 6 shows that the effectiveness of the regional retribution variable in Bogor City in 2018-2021 is included in two categories, namely "effective" because it is ranging between 90%-100% and "very effective" because the value is more than 100%, with the lowest score was 95.4% in 2020, 96.1% in 2019, 108.9% in 2018, and the largest number in 2021 was 114%.

The amount of HPKDD realization is obtained from the accumulation of profit shares (dividends) on Equity Participation in Regional Owned Companies/BUMD, namely in three fields: drinking water (PDAM), financial institutions

(Bank BJB and BPR), and various businesses (PD. Pasar Pakuan Jaya). The HPKDD target experienced an increase (0.41%) around Rp 114.112.981 in 2019, comparable to its realization, which increased with a larger number, around Rp 1,469.417.5055 (5.49%). This was due to an increase in the profit target in the drinking water sector, and all realizations increased except for the profit in the financial institution sector.

In 2020, despite being the initial period of COVID-19, there was an increase in the HPKDD target (19.36%) around Rp 5,437,197,809 in 2020, in line with its realization, which increased by a larger figure of Rp 3,685,448,881 (13.05%). This is due to the increase in targets for all types of HPKDD, and all of their realizations have increased.

In 2021, Bogor City will still be affected by the pandemic, so that the HPKDD target decreased (-3.28%) in 2021, around Rp 1,100,353,420. It caused by the consideration of the realization of HPKDD in 2020, which did not reach the target. However, this year's realization was not comparable to the decrease in the target because it increased around Rp 493,258,358, which experienced positive growth (1.54%) and became the largest nominal in the last four years. It caused by a decrease in profit targets in the drinking water sector and various businesses and an increase the realization of profits in financial institutions and various businesses.

TABLE 7. TARGET, REALIZATION, AND EFFECTIVENESS OF BOGOR CITY'S RESULT OF SEPARATED REGIONAL WEALTH MANAGEMENT IN 2018-2021

Year	Target (Billion Rupiah)	Realization (Billion Rupiah)	Effectiveness (%)
2018	27.96	26.77	95.71
2019	28.08	28.24	100.56
2020	33.52	31.92	95.24
2021	32.42	32.42	100

Table 7 shows that although the realization of HPKDD in 2018 and 2020 did not reach the target, and in 2021 it has the same target number as the realization rate, the level of effectiveness for that year is still in the "effective" category because it is between 90%-100%. which is 100% in 2021, 95.7% in 2018, 95.2% in 2020. So that the highest level of effectiveness is in 2019 (100.6%), included in the "very effective" category because the value is more than 100%.

The amount of LLPADS realization is obtained from various types of income, namely current account receipts, regional compensation claims (TGR), fines for late work implementation, local tax fines, regional retribution fines, income from returns, results of utilization of regional assets, BLUD revenues, JKN capitation funds, contributions from the Bogor Botanical Gardens, forwarding of loan interest to PDAM Tirta Pakuan, rental of rusunawa, proceeds from the sale of regional assets that are not separated, income from fines for violations of regional regulations, other legitimate PAD, contributions from companies/business entities, results from the use of BMD that are not separated, income from fines for terminating the lease BMD, the proceeds from the sale of BMD which are not separated, the proceeds from the sale of equipment and machinery, as well as receipts of commissions, discounts, or other forms. In 2019, the LLPADS target increased around Rp 10,253,384,329, which grew 4.34% and was comparable to the realization, which increased around Rp 627,387,339 but grew at a lower rate (only 0.26%). The increase influences this in targets for all types of income except for fines and demands for regional compensation (TGR), which do not have a certain amount. Likewise, all realizations that have increased are receipts services giro, income fines for delays in work implementation, fines of local taxes, JKN capitation fines, forwarding of loan interest to PDAM Tirta Pakuan, and rental of flats.

In 2020 there was a decrease in the target (- 6.17%), around Rp 15,211,047,000 with the initial consideration of the pandemic and the realization in 2019, which did not reach the target. However, this year's realization is not comparable to the decrease in the target because it experienced positive growth (20%), increased around Rp 51,383,990,311. This is influenced by the decrease in all targets except the contribution of botanical gardens, rental flats, and contributions from companies/business entities. Meanwhile, the increase in realization was influenced by all types of increased income except tax penalty income, results from the use of regional wealth, income from JKN capitation funds, contributions from Bogor Botanical Gardens, forwarding of loan interest to PDAM Tirta Pakuan, and proceeds from the sale of regional assets that are not separated.

In 2021 there will be an increase in the target around Rp 53,601,474,444, which is a positive growth (23.17%). Compared with the realization, which experienced positive growth with a larger number (31.86%), around Rp 94,319,279,475. The realization figure in 2021 is the largest nominal in the last four years. This is due to the increase in targets for all types of income except for fines and demands for regional compensation (TGR), which do not have a certain amount. Likewise, the realization of all types of income increased except for the receipt of demand deposits and income from returns.

The realization of LLPADS not reaching the target only occurred in 2019 with an effectiveness of 99.24% but still entered the "effective" category and was followed by the highest class, namely "very effective" because the value is more than 100%, which was obtained in the order of the largest percentage in 2021 by 137%, in 2020 by 128%, and in 2018 by 103.3% (Table 8).

TABLE 8. TARGET, REALIZATION, AND EFFECTIVENESS OF BOGOR CITY'S OTHER LEGITIMATE LOCAL REVENUE IN 2018-2021

Year	Target (Billion Rupiah)	Realization (Billion Rupiah)	Effectiveness (%)
2018	236.27	244.02	103.28
2019	246.53	244.65	99.23
2020	231.31	296.04	127.97
2021	284.92	380.35	137

The determination of the Bogor City's PAD target is quite volatile from 2018-2021. It is based on consideration of the conditions being experienced, namely before and during the COVID-19 pandemic. The target for 2019 has increased around Rp 27,154,608,638 (3.06%). It is comparable to the good achievement results because the realization of PAD in Bogor City managed to exceed the predetermined target, and there was a growth in PAD in Bogor City in 2019 with a figure of a percentage that is larger than the target growth (11.13%) increased around Rp 101,558,045,143.

At the beginning of the pandemic (2020), there was a decrease in the PAD target (-18.92%) around Rp 173,019,527,119. It is comparable to the decreased of realization around Rp 141,738,774,279 (-13.98%). It is due to various considerations, and adjustments, along with the results of the calculation of the economic potential due to presence of COVID-19. The following year, the government raised the PAD target around Rp 173,019.527,119 (23.33%) with the same nominal in 2019. It is based on consideration of conditions that are still experiencing the COVID-19 disaster, but the

realization of PAD obtained is far greater than the previous three years. The realization of PAD in 2021 experienced a greater growth (24.26%), increased around Rp 211,580,590,512 where this figure is the largest growth from the last four years.

TABLE 9. TARGET, REALIZATION, AND EFFECTIVENESS OF BOGOR CITY'S LOCAL REVENUE IN 2018-2021

Year	Target (Billion Rupiah)	Realization (Billion Rupiah)	Effectiveness (%)
2018	887.39	912.19	102.79
2019	914.55	1013.75	110.84
2020	741.53	872.01	117.59
2021	914.55	1083.59	118.48

It can be concluded that despite the COVID-19 pandemic, Bogor City's PAD has improved from year to year, although initially, there was an adjustment to the target first. Still, it turns out that Bogor City can show its superiority which is marked by PAD which always reaches the target every year with a high percentage. Continued to increase around 102.8% in 2018, 110.8% in 2019, 117.6% in 2020, and 118.5% in 2021, so Bogor City's PAD is included in the "very effective" category in the last four periods because the value is more than 100% (Table 9).

C. Analysis of the Contribution of Four Types of Income in Bogor City's Local Revenue in the Period Before and During the COVID-19 Pandemic Broadly speaking, when viewed based on the annual period, the contribution of the four types of income in Bogor City's PAD is dominated by local taxes annually.

The average percentage is 62.26%, which is 65% in 2018, 68.01% in 2019, 58, 37% in 2020, and 57.66% in 2021 (Figure 3). Every year, local tax contributions are included in the "very good" category because the value is always more than

50%. The second position with an average percentage of 30.21% is LLPADS which is divided into two categories where the initial two years are included in the "medium" category because they are between 20.10%-30%, which is 26.75% in 2018 and 24.13% in 2019 and then rose to the category of "good enough" in the next two years because it was between 30.10%-40%, namely 33.95% in 2020 and 36.02% in 2021 [16].
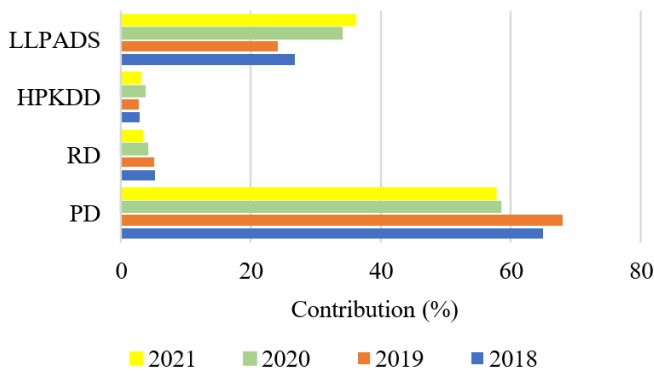

Figure 3. Contribution of four types of income to Bogor City's Local Revenue in 2018-2021

Regional retribution and HPKDD have a very small average contribution (4.42% and 3.09%). Both are included in the category of "very low" contribution because in the 2018-2021 period, the contribution rate obtained is only in the range of 0.00%-10% annually. The value for the regional retribution was 5.31% in 2018, 5.07

% in 2019, then decreased to 4.01% in 2020 and 3.33% in 2021. While HPKDD had the smallest contribution compared to other types of income with fluctuating numbers (2.93% in 2018, decreased to 2.79% in 2019, then increased to 3.66% in 2020, and again reduced to 2.99% in 2021).

Based on monthly data, PD is the largest contribution compared to other types of income and are dominated by the "very effective"

category, with contributions ranging between 22.21%-93.87%. The second position is the LLPADS variable, with contribution figures that fall into various categories between 0.24%-74.65%. RD is in the third position with contributions ranging from 1.94%- 17.01% and dominated by the "very poor" category. HPKDD variable with the lowest position with the acquisition of a contribution between 0.00%-74.65% so that the "very poor" category dominates it. There is also a 0% contribution to the HPKDD variable that occurs because there are no funds obtained from BUMD deposits, there is no rule states that BUMD must deposit their share of profits in a certain period.

D. Analysis the Influence of COVID-19 and Other Determinants on Bogor City's Local Revenue

Multiple regression analysis with dummy variable was used to determine the influence of the eight independent variables, namely Local Tax (PD), Regional Retribution (RD), Results of Separated Regional Wealth Management (HPKDD), Other Legitimate Local Revenue (LLPADS), Number of Population (JP), Inflation (IN), Entertainment Tax (PHi), and Number of Hotel Business Units (JHo) on one dependent variable, namely Local Revenue (PAD) of Bogor City with additional qualitative variables namely conditions before and during the COVID-19 pandemic. Before the model is regressed, several types of tests are carried out, including hypothesis testing, multicollinearity, heteroscedasticity, and autocorrelation, to get the best model.

TABLE 10. MULTICOLLINEARITY TEST

lpad	VIF
lpd	1.84
lrd	1.78
lhpkdd	1.56
lllpads	1.58
IN	1.56
ljp	2.76
lphi	3.02
ljho	2.44

The results of this study indicate that the Variance Inflation Factor (VIF) value obtained by each independent variable is very small and the value ranging between 1-5 according to the rule of thumb, so there is no indication of multicollinearity problems (Table 10).

TABLE 11 WHITE TEST

source	chi2	p-value
heteroskedasticity	33.00	0.418
skewness	12.14	0.206
kurtosis	0.13	0.722
total	45.27	0.337

Heteroscedasticity test using the White Test, the results provide information based on the chi2 statistic obtained a p-value greater than 5%, so it does not reject H0 or insignificant, so there is no indication of heteroscedasticity (Table 11).

TABLE 12 DURBIN WATSON TEST

Number of gaps in sample	= 6
Durbin-Watson d-statistic (9, 33)	= 1.262

The results of the autocorrelation test using the Durbin Watson test counted as many as 33 observations due to the 15 periods of HPKDD's realization is 0 rupiahs. The statistical results are 1.262 (Table 12) which close to number two, so there may be no autocorrelation problem. When compared with the critical value from the Durbin Watson table, this number also enters an area that is free from autocorrelation.

TABLE 13 BREUSCH-GODFREY TEST

lags	chi2	df	Prob>chi2
1	1.318	1	0.251

After being strengthened using the Breusch-Godfrey Test, the results show that with the hypothesis H0: there is no autocorrelation, the value of the p-value is more than 5%, which is 0.251 (Table 13), which means it does not reject H0 so there is no indication of autocorrelation. After performing various Classical Linear Regression Model Assumption Tests, the best model obtained is that there are eight independent variables and one dependent variable, which is converted into its natural logarithm, except for the inflation variable, which is already in percent (%) and one qualitative variable is used, namely the dummy variable with consideration of two conditions (condition 0 before COVID-19 and condition 1 during COVID-19).

The estimation results in the ANOVA (Analysis of Variance) table show that the $R^2 = 0.897$ value is obtained, which means that 89.7% of the diversity of the dependent variable can be explained by the independent variable, while the other 10.29% is explained by other variables outside the model. There is an F-statistic value of 0.000 and it is smaller than $\alpha=5\%$ or significant. This value means that there is at least one independent variable that has a significant effect on the dependent variable, meaning that the eight independent variables simultaneously have a significant effect on the dependent variable (PAD).

Table 14 shows that from eight independent variables, four variables are significant at the 5% level of significance, namely local taxes, LLPADS, inflation, and population. The coefficient with a positive sign means that the independent variable has a positive relationship or is in the same

direction as the dependent variable. There is only one independent variable, population, who have a negative relationship with Bogor City's Local Revenue.

TABLE 14. RESULTS OF MULTIPLE LINEAR REGRESSION ANALYSIS WITH DUMMY VARIABLE

lpad	Coef	$P > |t|$
lpd	0.777	0.000
lrd	0.186	0.139
lhpkdd	0.024	0.156
lllpads	0.164	0.000
in	0.304	0.044
ljp	-5.329	0.042
lphi	0.005	0.894
Ljho	1.942	0.290
covid during	0.072	0.685
Cons	47.409	0.079

COVID-19

PAD of Bogor City is not influenced by COVID-19; it begins with adjustments to a pandemic where the local government implements many policies that limit people's movement, especially in the economic sector, namely PSBB (Large-Scale Social Restrictions). When the PSBB period ended, Bogor City's Government decided to start the pre-Adaptation to New Habits or New Normal phase, with the PSBB rules still being implemented. When Bogor City entered the 1'st level of PPKM (Implementation of Restrictions on Community Activities), economic activity has revived and could operate again even though it is under applicable regulations. Although COVID-19 is an extraordinary disaster, Bogor City is quite adaptive to the conditions that occur and has managed to improve

conditions. With the high productivity of the community, the income also earned increases, resulting in the acquisition of various types of regional income increasing, marked by the growth of all kinds of local revenue in 2021.

Local Tax (PD)

PAD of Bogor City is influenced positively by the local tax variable. This result is in line with the initial hypothesis and previous research, which states that the local tax variable with a significant level of 0.000 is below a significance of 0.05 (5%), so it has a significant effect on PAD [19]. The increase in the realization of local taxes will affect the realization of PAD because with the increasing number of taxpayers, both from the hotel, restaurant, entertainment, billboards, street lighting, parking, groundwater, PBB-P2, and BPHTB tax categories, the nominal of local taxes will also be greater. Since local tax is one type of income in PAD, it will directly affect the amount of PAD in Bogor City also supported by looking at the results of the contribution analysis, which shows that local taxes are included in the "very good" category because the contribution's value more than 50% annually from 2018-2021.

Regional Retribution (RD)

PAD of Bogor City is not influenced by regional retribution. This result is in line with the initial hypothesis and previous research, which states that the significance value of regional retribution is 0.681, which means that the regional retribution variable has no significant effect on PAD in North Luwu Regency [20]. The increase in the realization of regional retribution will affect the realization of PAD because with the increasing number of mandatory retributions from public services, business services, and certain permits, the nominal regional retribution paid will also increase, so that when regional retribution increase, it will be directly proportional to the increase in PAD. Although regional retribution is one type of income in PAD, it will also affect the amount of PAD

in Bogor City. In reality, regional retribution doesn't affect Bogor City's PAD, supported by looking at the results of the contribution analysis, which shows that regional retribution is included in the "very poor" category because the contribution's value ranging between 0.00%-10% annually from 2018-2021.

Results of Separated Regional Wealth Management (HPKDD)

PAD of Bogor City is not influenced by the results of separated regional wealth management (HPKDD). This result is in line with the initial hypothesis and previous research [21], with the results of the Result of Separated Regional Wealth Management (HPKYD) variable having no significant effect on PAD because it has a significant value of 0.452. The increase in the realization of HPKDD will affect the realization of PAD because with the increasing share of profits distributed to local governments on BUMD capital participation from financial institutions, various businesses, and drinking water companies, the nominal HPKDD obtained will also increase, so that when HPKDD increaser, will be directly proportional to the rise in PAD. Since HPKDD is one type of income in PAD, it will also affect the amount of PAD in Bogor City. In reality, HPKDD doesn't affect Bogor City's PAD, supported by looking at the results of the contribution analysis, which shows that HPKDD is included in the "very poor" category because the contribution's value ranging between 0.00%-10% annually from 2018-2021.

Other Legitimate Local Revenue (LLPADS)

PAD of Bogor City is influenced positively by other legitimate local revenue (LLPADS). These results are in line with the initial hypothesis and also previous research, which states that based on the results of the t-test, other variables of legitimate income have a significance value of 0.01 < 0.05, so that partially, this variable has a significant effect on PAD Bandung Regency [22]. LLPADS consists of several sources of income, namely the proceeds from the sale of Regional

Property (BMD) which are not separated, the proceeds from the sale of equipment and machinery, the proceeds from the utilization of BMD that are not separated, demand deposits, receipts for claims for regional financial compensation, receipts of commissions, discounts, or other forms of income, other fine income for delays in the implementation of work, local tax fines, regional retribution fines, income from returns, Regional Public Service Agency (BLUD) revenues, fines for termination of BMD gods, fines for terminating BMD leases, and fines for violations local regulation.

The increase in the realization of LLPADS will affect the realization of PAD because LLPADS is one type of income in PAD; it will directly affect the amount of PAD in Bogor City. It is also supported by looking at the results of the contribution analysis, which shows that LLPADS is included in two categories, namely "good enough" because it is in the contribution value between 30.10% - 40% in 2020-2021 and the "currently" category because the contribution's value ranging between 20.10% -30% from 2018-2019.

Population (JP)

PAD of Bogor City is influenced negatively by the population. These results are in line with previous research, which states that the t-test results say that the population variable (X2) had a negative and significant effect on Denpasar City's Local Revenue (PAD) from 1997-2011 [23]. However, this is not the same as the initial hypothesis, which assumed that the population positively affected PAD in Bogor City. Based on [24], the population in Bogor City (2018-2021) has consistently increased. Still, in 2020 the COVID-19 pandemic caused the number of unemployed to increase due to many workers who were temporarily laid off and even laid off (PHK/Termination of Employment Relations). High unemployment rates characterize workers who are unemployed or affected by layoffs. The influence of the increasing unemployment rate is that the

community does not have a fixed income anymore, and some others experience salary cuts so that public consumption will be low on goods and services that are the object of local taxes and regional retribution. This decrease can cause PAD to decrease. So, although the population is high, it does not make PAD also increased because of the economic influence felt due to the pandemic that occurred, also caused by a lack of public awareness in paying taxes/other mandatory contributions, or even people prefer to buy goods that are primary so that taxes payment has been postponed.

Inflation (IN)

PAD of Bogor City is influenced positively by inflation. This result is in line with the initial hypothesis and previous research, which states that the inflation variable has a positive and significant impact on the level of Local Revenue by using α = 5% with a coefficient value of 0.048 [25]. When the money supply increases, the price of goods, in general, will increase. In this case, the beneficiary parties are producers with businesses that will earn higher incomes than the increase in production costs caused by inflation. Thus, producers will tend to increase production in the hope that more revenue will be obtained, especially the production of basic needs, which are the primary needs of each individual so that they will continue to buy them even though prices increase, people's purchasing power does not decrease, when the income of entrepreneurs increases, their ability to pay taxes is also high so that the PAD of Bogor City will increase. Another factor is also caused by the inflation rate of Bogor City, which is included in the light category.

Based on monthly inflation data in Bogor City for 2018- 2021, when calculated using the y-o-y (year on year) method, the results obtained are that the inflation rate for Bogor City from 2018- 2021 is always less than 10% annually [26]. The relationship with high inflation will cause significant obstacles to the acquisition of regional income; besides that, it will affect the level of economic productivity in the community, but low inflation will have a positive influence on PAD [27].

Entertaiment Tax (PHi)

PAD of Bogor City is not influenced by the entertainment tax. This result is in line with the initial hypothesis and previous research, namely the p-value of 0.517, so the entertainment tax does not affect the Local Revenue of Regency/City Governments in East Java in 2011-2018 [28]. The entertainment tax is one type of local tax, so the realization of the entertainment tax will also affect PAD. But in reality, the entertainment tax in Bogor City has a tiny contribution to Bogor City's PAD with a very low number ranging between 0.00%-10%, which 3.37% in 2018, 3.25% in 2019, 1.25% in 2020, and 0.56% in 2021.

So that it is included in the "very poor" category and its realization continues to decrease from 2018-2021. Hence, the entertainment tax does not influence Bogor City's Local Revenue.

Number of Hotel Business Units (JHo)

The number of hotel business units is lodging/resting service provider facilities, including other related services for which a fee is charged. The increase in the number of hotel business units will affect the hotel tax earned annually. Hotel tax, which is one component of local taxes, when increases, will also affect the amount of local taxes, which are one type of income in PAD. Based on [29], the number of hotels in Bogor City has increased annually, (2,816 units in 2018, 2,893 in 2019, 2,947 units in 2020, and 2,992 units in 2021. But in reality, the number of hotel business units that continues to increase does not make hotel taxes also increase. The hotel tax in Bogor City has a tiny contribution to Bogor City's PAD with a very low number, ranging between 0.00%-10% with 9.63% in 2018, 9.39% in 2019, 5.69% in 2020, and 6.2% in 2021

so that it is included in the "very poor" category and its realization continues to decrease from 2018-2021. Hence, PAD of Bogor City is not influenced by the number of hotel business units. This result is in line with the initial hypothesis as well as previous research which states that the number of hotels variable has a probability value of 0.2209 so it is not proven to have a significant effect on PAD in the tourism sector [30].

IV. CONCLUSION AND SUGGESTION

PAD of Bogor City is not influenced by COVID-19, which is indicated by the insignificant p-value of the estimated results obtained. Comparison of targets and realizations before and during COVID-19 has increased, but COVID-19 and the policies for providing incentives/stimulus have resulted in adjustments to the targets and realization of Bogor City's PAD in 2020 which decreased, but Bogor City's PAD during COVID- 19 in 2021 managed to become the largest realization in the 2018-2021 period.

The effectiveness of PAD and the four types of income in it in conditions before and during COVID-19 are not much different because they are included in the "very effective" and "effective" categories. The biggest average contribution is Local Taxes in the "very good" category, Other Legitimate Local Revenue which are Legitimate with the "currently" and "good enough" categories, Regional Retribution and Results of Separated Regional Wealth Management with the "very poor" category.

PAD of Bogor City is influenced negatively by Population (JP) variable, and influenced positively by the Local Tax (PD), Inflation (IN), and Other Legitimate Local Revenue (LLPADS) variables. While PAD is not influenced by the Regional Retribution (RD), Results of Separated Regional Wealth Management (HPKDD), Entertainment Tax (PHi), Number of Hotel Business Units (JHo), and COVID-19.

The suggestion that can be submitted is the Bogor City's Government is expected to be able to maintain and increase Bogor City's PAD so that it grows positively in the next period both from the target and its realization, namely by utilizing the regional potential from various incomes in PAD which will have an influence on the amount of regional revenue, so that it can be used as a reference by other regional governments in exploiting the potential of their respective regions.

As a manifestation of the implementation of regional autonomy, the Bogor City's Government is expected to implement various interventions to increase the realization of PAD, namely by reinforcing rules/policies that require the community to pay dues, conducting socialization on the importance of paying taxes and other mandatory contributions so that awareness increases, also accompanied by improve the quality of public services to facilitate the payment of the mandatory fee transactions. In this study, the influence of PAD in Bogor City can only be seen from eight independent variables, so it is hoped that future research can use other relevant additional variables in analyzing its influence on PAD.

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