



The Impact of the Tourism Sector on Regional Original Income on the Island of Sulawesi: Panel Data Analysis 2017–2021

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A B S T R A C T

This study analyzes the impact of the tourism sector on Local Own-Source Revenue (PAD) in six provinces in Sulawesi during the period 2017–2021 using panel data regression with the Fixed Effect Model (FEM). The results show that the number of hotels, hotel occupancy rates, and the number of tourist attractions have a positive but insignificant effect on PAD. Meanwhile, the number of tourists has a significant negative effect, indicating tourism leakage due to the dominance of the informal sector and weak retribution management. These findings emphasize the need for tax digitalization, destination management strengthening, and informal sector integration so that the contribution of tourism to PAD is more optimal.

Keywords: *tourism; PAD; Hotels; Tourist Attractions; Tourists*

ABSTRACT

Penelitian ini menganalisis pengaruh sektor pariwisata terhadap Pendapatan Asli Daerah (PAD) di enam provinsi Sulawesi periode 2017–2021 dengan regresi data panel menggunakan Fixed Effect Model (FEM). Hasil menunjukkan jumlah hotel, tingkat hunian hotel, dan jumlah objek wisata berpengaruh positif namun tidak signifikan terhadap PAD. Sementara itu, jumlah wisatawan berpengaruh signifikan negatif, mengindikasikan adanya tourism leakage akibat dominasi sektor informal dan lemahnya tata kelola retribusi. Temuan ini menegaskan perlunya digitalisasi pajak, penguatan manajemen destinasi, serta integrasi sektor informal agar kontribusi pariwisata terhadap PAD lebih optimal.

Keywords: *Pariwisata; PAD; Hotel; Objek Wisata; Wisatawan*

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INTRODUCTION

Tourism is one of the important economic sectors that has the potential to make a significant contribution to regional development, including as a source of Regional Original Revenue (PAD). In many cases, an increase in the number of tourist visits and tourism-related activities can boost local revenue through hotel taxes, attraction levies, local consumption and multiplier effects to other sectors (Meyer & Meyer, 2015). Some empirical research shows that tourism can directly and indirectly increase income for the region and drive the local economy (Bakalo *et al.*, 2025)

However, the relationship between tourism variables (such as the number of hotels, hotel occupancy rates, number of tourist attractions, and number of tourists) with PAD is not always consistent or linear. For example, research conducted in national park areas in Indonesia shows that indicators of tourism competition do not always correlate strongly with non-tax income or local government income (Meyer & Meyer, 2015). In addition, in the context of nature tourism, recent international research has shown that nature-based tourism can contribute to national GDP and local income, but the amount of contribution depends on policies and revenue-sharing mechanisms (Jie *et al.*, 2025).

Indonesia's context also presents additional challenges: during the COVID-19 pandemic, the tourism sector experienced a drastic decline and negatively impacted regional income and reduced local economic activity (Pham *et al.*, 2022). Therefore, although the tourism potential for PAD is large, it is necessary to conduct the latest empirical studies specific to certain regions (Sulawesi Island) with specific variables in order to know the mechanism and strength of the empirical relationship.

In Indonesia itself, research in West Java using tourism data (number of hotels, hotel occupancy, number of tourists) shows that tourism development has a positive impact on economic growth and indirectly on poverty alleviation, including its contribution to regional PAD (Simorangkir *et al.*, 2024). These findings support the need for further research in other regions (such as Sulawesi) by using a panel data approach to capture variations between provinces and between time transports.

The island of Sulawesi has great tourism potential with different characteristics in each province. North Sulawesi is known for marine tourism (Bunaken Marine Park), South Sulawesi for cultural tourism (Tanah Toraja), while other provinces have their own natural and cultural peculiarities. However, BPS data (2017–2021) shows fluctuations in the number of tourists, hotels, occupancy rates, and PAD. In 2020, for example, the COVID-19 pandemic drastically reduced tourist visits and had an impact on PAD, before showing signs of recovery in 2021. The following is PAD data, the number of hotels, the occupancy rate of hotels, the number of tourist attractions, and the number of tourist visits in Sulawesi from 2017-2021:

Table 1. PAD Data and Tourism Sector in Sulawesi

Year	PAD	Number of Hotels	Hotel Occupancy Rate	Number of Attractions	Number of Tourists
2017	7235427475	169	48.81	155	7357055
2018	7808666788	222	51.23	149	6598637
2019	8422570354	229	51.09	147	6003594
2020	7917535488	241	34.29	134	3540957
2021	9343640400	245	38.08	179	3748220

Source : BPS Indonesia (2025)

Several previous studies have shown mixed results regarding the relationship between the tourism sector and PAD Rosalina (2017), found that the number of hotels was insignificant, while the number of tourists had a positive effect on PAD. Fauzi (2018), emphasizing that GDP per capita, the number of population, the number of tourist attractions, and the number of tourists affect PAD. However, there is still limited research that specifically analyzes the contribution of the tourism sector to PAD on the island of Sulawesi using the latest panel data approach. Therefore, this study focuses on answering several important questions: whether the number of hotels has a significant effect on PAD, whether the hotel occupancy rate has a real contribution, how the number of tourist attractions influences, and the extent to which the number of tourists affects the PAD in the provinces of Sulawesi. This study aims to analyze the influence of these tourism factors on PAD with a panel data approach, so that it can provide a more comprehensive empirical

understanding while producing relevant policy recommendations for strengthening regional fiscal independence.

LITERATURE REVIEW

Regional Original Revenue (PAD)

PAD is the main indicator of regional fiscal independence which is sourced from regional taxes, levies, results of regional wealth management, and other legitimate revenues (Halim, 2007; (UU No. 33/2004). The large contribution of PAD to the APBD reflects the ability of the regions to finance development without full dependence on the central government (Halim, *et al.*, 2014; Samsubar, 2003). Thus, increasing PAD is a strategic goal for local governments, one of which is through the development of the tourism sector.

Number of Hotels and Hotel Occupancy Rate

Hotels not only provide accommodation, but also act as a driver of local development through job creation, taxes, and multiplier effects for the surrounding economy (Qadarrochman, 2010). Hotel occupancy rates are seen as a direct indicator of tourism activity (Badrudin, 2001; Suastika & Yasa, 2017). Theoretically, the higher the number of hotels and occupancy rates, the greater the contribution to PAD through hotel taxes and levies (Abdullah & Hamdan, 2012). However, empirical results show inconsistencies; Some studies have found a significant effect (Wijaya & Djayastra, 2019), while others do not (Rosalina, 2017).

Number of Attractions

Tourist attractions that are well managed can increase regional revenue through ticket levies, parking, and other services (Adisasmita, 2010). The existence of tourist attractions increases the attractiveness of the destination, but its contribution to PAD is greatly influenced by the quality of management and infrastructure (Fauzi, 2018; Suwanto, 2004). Empirical research shows mixed results: some studies have found significant positive influences (Suryani, 2017), while other studies confirm that the quantity of destinations alone is not enough without professional management (A. Fauzi, 2018).

Number of Tourists

In theory, the increase in the number of tourists should increase PAD revenue because tourists contribute through consumption, taxes, and levies (Austriana, 2005; Purwanti & Dewi, 2014). However, the phenomenon of tourism leakage makes tourist spending not entirely recorded in the official regional revenue, because most of it flows to the informal sector or actors outside the region (Meyer & Meyer, 2015; Mitchell & Ashley, 2010). Research shows inconsistent results: some have found significant positive influences (Sari & Yuliarmi, 2018), but there are also those who report negative or insignificant influences (Prianto, 2021).

Tourism Industry and Regional Economic Development

Tourism is closely linked to regional economic growth, through job creation, increased investment, and fiscal contributions (Mathieson & Wall, 2002; Spillane, 1987). However, this contribution is largely determined by local government governance and policies (Meyer & Meyer, 2015; UNWTO, 2017). International studies confirm that tourism can be a driver of local economic development, but the impact varies between regions depending on the capacity of institutions and the attractiveness of the destination (Bakalo *et al.*, 2025; Jie *et al.*, 2025).

RESEARCH METHODS

This study uses a quantitative approach with a positivistic paradigm to analyze the influence of the tourism sector on Regional Original Revenue (PAD) in six provinces on the island of Sulawesi during the period 2017–2021. The data used is secondary data obtained from the Central Statistics Agency (BPS) as well as official publications related to regional finance and tourism. The panel data regression method was chosen because it is able to combine the dimensions of time series and cross section so that it is more accurate in capturing interprovincial and inter-temporal dynamics (Basuki & Yuliadi, 2014; Gujarati, 2013).

The dependent variable in this study is PAD, while the independent variable consists of the number of hotels, hotel occupancy rate, number of tourist attractions, and number of tourists. The operational definition is as follows: PAD is measured in thousands of rupiah, the number of hotels is calculated in units, the hotel occupancy rate is expressed as a percentage, the number of tourist attractions in paid destination units, and the number of tourists in thousands of people (Adisasmita, 2010; Halim, 2007).

The analysis model is written in the form of a panel data regression equation:

$$\ln(Y_{it}) = \alpha + \beta_1 \ln(X_{1it}) + \beta_2 X_{2it} + \beta_3 \ln(X_{3it}) + \beta_4 \ln(X_{4it}) + e_{it}$$

Information:

Ln	= logaritma natural
Y	= Regional Original Revenue (PAD)
α	= Konstanta
$\beta_1, \beta_2, \beta_3, \beta_4$	= Value of Regression Coefficient
X_1	= Number of Hotels
X_2	= Hotel occupancy rate
X_3	= Tourist Attractions
X_4	= Number of Tourists
i	= Sulawesi Province
t	= Period (2017-2021)
and	= Error

With i indicating the province, t indicates the year, and e as an error term. Model selection is carried out through the Chow Test to compare the common effect with the fixed effect model, as well as the Hausman Test to determine the fixed effect or random effect. The test results show that the best model used is the Fixed Effect Model (FEM) (Napitupulu *et al.*, 2021). The validity of the model was tested with classical assumptions that included tests of normality, multicollinearity, heteroscedasticity, and autocorrelation. The hypothesis test was carried out with a t-test to see the partial influence of each variable, an F test to test the simultaneous influence, and a determination coefficient (Adjusted R^2) to measure the proportion of PAD variation that can be explained by the tourism variable (Sugiyono, 2014).

RESULTS AND DISCUSSION

Descriptive Data Analysis

Descriptive analysis was conducted to provide an overview of the research variables consisting of Regional Original Revenue (PAD), the number of hotels, the occupancy rate of hotels, the number of tourist attractions, and the number of tourists in six provinces in Sulawesi during the period 2017–2021. The number of observations analyzed was 30 data. The results showed that the PAD had an average of 20.66 with a range between 19.50 to 22.30 and a standard deviation of 0.84, indicating relatively stable fluctuations between provinces. The number of hotels has an average of 2.96 with considerable variation (minimum of 1.09 and maximum of 5.01), indicating a significant difference in the availability of accommodation between regions. The hotel occupancy rate has an average of 384.67 with a very high standard deviation (1317.28), reflecting the large disparity between provinces. Meanwhile, the number of tourist attractions is relatively consistent with an average of 3.07, while the number of tourists has an average of 13.15 with relatively homogeneous variations.

The results of the descriptive statistical test in this study can be described in the following table:

Table 2. Descriptive Statistical Test Results

	And	X1	X2	X3	X4
Mean	20.66472	2.964389	384.6707	3.077513	13.15322
Median	20.77548	2.831480	45.97000	2.995732	12.82256
Maximun	22.30826	5.017280	6056.000	4.158883	14.89898
Minimum	19.50902	1.098612	25.94000	1.945910	11.70258
Std.Dev.	0.843461	1.115392	1317.285	0.570893	1.071810

Skewness	0.411509	0.529695	3.665210	0.144337	0.509671
Kurtosis	2.318333	2.231461	14.894040	2.676618	1.770524
Jarque-Bera	1.427536	2.141202	244.0040	0.234886	3.188335
Probability	0.489795	0.342802	0.000000	0.889191	0.203078
Sum	619.9416	88.93166	11540.12	92.32538	394.5967
Sum Sq.Dev.	33.31454	36.07889	50321916	9.451648	33.31454
Observations	30	30	30	30	30

Source: Data Processing Eviews 12, 2025

The Jarque-Bera normality test showed most of the variables were normally distributed with a probability of > 0.05 , except for the hotel occupancy rate which was not normally distributed. These results indicate that most of the data is feasible to use in the panel regression model.

When viewed from the annual trend, PAD in general showed an increase from 2017 to 2019, decreased in 2020 due to the COVID-19 pandemic, and then recovered again in 2021. The number of hotels continues to increase every year, signaling new investment in the hospitality sector, although it does not always have a significant impact on PAD. Hotel occupancy rates fluctuated sharply, especially with a drastic decline in 2020 and a recovery in 2021. The number of tourist attractions was relatively stable throughout the research period, with a slight increase in 2021, which suggests that the development of destinations is still progressing gradually. The number of tourists has tended to decline since 2017 and bottomed out in 2020, before showing a recovery in 2021.

These findings show that the dynamics of tourism in Sulawesi are influenced by external factors such as the pandemic as well as internal factors in the form of destination management capacity and regional fiscal governance. Although tourism has great potential to drive PAD, its contribution is largely determined by the quality of management, the effectiveness of regulations, and the digitization strategy of levies (Meyer & Meyer, 2015; Pham *et al.*, 2022; UNWTO, 2017).

Model Selection Test Results

Chow Test

Table 3. Chow Test Results

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	40.407987	(5,20)	0.0000
Cross-section Chi-square	72.213749	5	0.0000

prob value $0.00 < 0.05$, then the selected one is the FEM model

Hausman Test

Table 4. Hausman Test Results

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	18.032110	4	0.0012

prob value $0.0012 < 0.05$, then the selected FEM model

Based on the results of the Chow Test (prob = $0.0000 < 0.05$) and the Hausman Test (prob = $0.0012 < 0.05$), the best model used in this study is the Fixed Effect Model (FEM). The Lagrange Multiplier (LM) test was not performed because the results of the two previous tests consistently showed that FEM was the

most suitable model. The LM test is generally used to compare the Common Effect Model (CEM) with the Random Effect Model (REM), so it is not necessary in the context of this study.

Classical Assumption Test Results

Multicollinearity Test

Table 5. Multicollinearity Test Results

	X1	X2	X3	X4
X1	1	-0.0295084...	0.72237391...	0.66697069...
X2	-0.0295084...	1	0.04551078...	-0.0549686...
X3	0.72237391...	0.04551078...	1	0.62786285...
X4	0.66697069...	-0.0549686...	0.62786285...	1

Based on the results of the correlation analysis, it is known that the correlation value between X1 and X2 is -0.0295; X1 and X3 by 0.722; X1 and X4 by 0.6670; X2 and X3 by 0.0455; X2 and X4 by -0.0550; and X3 and X4 by 0.6279. All correlation values are below the threshold of 0.80, so it can be concluded that there is no multicollinearity problem in this study model (Napitupulu *et al.*, 2021).

Heterokedasticity Test

Table 6. Heterokedasticity Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.631982	0.542744	1.164421	0.2580
X1	-0.061823	0.047383	-1.304740	0.2068
X2	5.66E-06	7.75E-06	0.730871	0.4733
X3	-0.042884	0.040061	-1.070478	0.2972
X4	-0.019624	0.034929	-0.561818	0.5805

Based on the results of the heteroscedasticity test using the Glejser method, it is known that there is no indication of heteroscedasticity in the research model. This is indicated by the probability value on all independent variables greater than 0.05, so that the null hypothesis (H0) is accepted and the alternative hypothesis (H1) is rejected (Basuki & Yuliadi, 2014; Napitupulu *et al.*, 2021).

Regression equations

The FEM model produces the following equations:

$$\text{Log Yit} = 22.63 + 0.04 \cdot \ln X1 + 8.47 \cdot X2 + 0.10 \cdot \ln X3 - 0.18 \cdot \ln X4$$

The explanation is as follows:

The constant value of 22.63 represents the *intercept* in the regression model, which is the value of $\ln(\text{PAD})$ under the condition of all independent variables of zero value. Thus, this constant describes the *baseline* of the PAD before it is influenced by the number of hotels, hotel occupancy rates, the number of tourist attractions, and the number of tourists.

1. Number of Hotels (X1): Coefficient 0.04; every 1% increase in the number of hotels increases the PAD by 0.04%, and a decrease of 1% decreases the PAD by the same amount.
2. Hotel occupancy rate (X2): Coefficient 8.47; each increase of 1 percentage point (pp) of hotel occupancy increases PAD by around 8.47%, and a decrease of 1 pp decreases PAD by around 8.47%.
3. Number of Tourist Attractions (X3): Coefficient 0.10; every 1% increase in the number of tourist attractions increases the PAD by around 0.10%, and a decrease of 1% decreases the PAD by around 0.10%.
4. Number of Tourists (X4): Coefficient -0.18; A 1% increase in the number of tourists actually lowers PAD by 0.18%, while a decrease of 1% increases PAD by 0.18%.

Hypothesis Test Results

T test

Table 7. Test Results t

Dependent Variable: Y
Method: Panel Least Squares
Date: 08/18/25 Time: 18:45
Sample: 2017 2021
Periods included: 5
Cross-sections included: 6
Total panel (balanced) observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	22.62633	1.039576	21.76495	0.0000
X1	0.039399	0.090758	0.434109	0.6689
X2	8.47E-06	1.48E-05	0.570968	0.5744
X3	0.104429	0.076733	1.360939	0.1887
X4	-0.182696	0.066904	-2.730722	0.0129

1. Number of Hotels (JH): t-count $0.434 < t\text{-table } 2.048$; Sig. $0.6689 > 0.05 \rightarrow$ insignificant.
2. Hotel Occupancy Rate (THH): t-calculated $0.571 < t\text{-table } 2.048$; Sig. $0.5744 > 0.05 \rightarrow$ insignificant.
3. Number of Tourist Attractions (JOW): t-count $1,361 < t\text{-table } 2,048$; Sig. $0.1887 > 0.05 \rightarrow$ insignificant.
4. Number of Tourists (JW): t-count $2,731 > t\text{-table } 2,048$; Sig. $0.0129 < 0.05 \rightarrow$ had a significant negative effect.

In the FEM model, the t-test showed that JH ($t=0.434$; $p=0.6689$), THH ($t=0.571$; $p=0.5744$), and JOW ($t=1.361$; $p=0.1887$) were not significant to PAD, while JW was significantly negative ($t=2.731$; $p=0.0129$). Inference follows the t-test rules on the fixed effects panel (Baltagi, 2008; Gujarati, 2013; Wooldridge, 2010). Substantively, tourism capacity/attractions have not been effectively converted into revenue, while JW's negative direction is in line with *tourism leakage* and pandemic distortions (Mitchell & Ashley, 2010; Pham *et al*, 2022; UNWTO, 2017). Implications: strengthen revenue governance (digitalization of taxes/levies, integration of the informal sector) so that the contribution of tourism to PAD is more optimal.

Test F

Table 8. F Test Results

R-squared	0.991645
Adjusted R-squared	0.987885
S.E. of regression	0.092839
Sum squared resid	0.172381
Log likelihood	34.82053
F-statistic	263.7438
Prob(F-statistic)	0.000000

F test (simultaneous). In the FEM model, $F_{cal} = 263.7438 > F_{table} = 2.7587$ with $p = 0.0000 < 0.05$, so H_0 is rejected. This means that simultaneously JH, THH, JOW, and JW have a significant effect on PAD in Sulawesi province.

Coefficient Determination Test (R^2)

Table 8. Determination Coefficient Test Results (R^2)

R-squared	0.991645
Adjusted R-squared	0.987885
S.E. of regression	0.092839
Sum squared resid	0.172381
Log likelihood	34.82053
F-statistic	263.7438
Prob(F-statistic)	0.000000

Coefficient of determination. The Adjusted R-squared value = 0.987885 (98.79%) indicates that the PAD variation can be explained by the variables JH, THH, JOW, and JW of $\pm 98.79\%$, while the remaining $\pm 1.21\%$ is explained by other factors outside the model.

Research Results

The Effect of the Number of Hotels on PAD in Provinces on the Island of Sulawesi.

The results of the regression test with the Fixed Effect model showed that the variable number of hotels (JH) had a positive coefficient of 0.04, but it was not statistically significant ($t\text{-count } 0.434 < t\text{-table } 2.048$; $\text{sig. } 0.6689 > 0.05$). This means that although the direction of the relationship is positive, the increase in the number of hotels has not been shown to have a real effect on the Regional Original Income (PAD) in the provinces on the island of Sulawesi in the study period.

Theoretically, the more hotels that are established should increase PAD revenue through hotel taxes, regional levies, as well as multiplier impacts from tourism activities. However, the results of this study show that the existence of hotels alone is not enough to encourage an increase in PAD. This can be caused by several factors. First, not all hotels have a high occupancy rate, so the resulting tax contribution is relatively small. Second, there are still weaknesses in the mechanism for collecting and supervising hotel taxes in the regions, which has the potential to cause revenue leakage. Third, there is the dominance of non-formal accommodations such as homestays, rental houses, or community-based lodging, which are not recorded in the official regional tax system.

These findings are consistent with research Rosalina (2017), which also found that the number of hotels had no significant effect on PAD. In other words, the contribution of new hotels will be felt if the occupancy rate is high and the tax collection mechanism is effective. These results are different from studies Simorangkir *et al.*, (2024), in West Java which emphasized that the development of tourism facilities, including hotels, is able to increase PAD. This difference can be explained by variations in regional governance, fiscal capacity, and characteristics of tourists in each region.

The Effect of Hotel Occupancy Rate on PAD in Provinces on Sulawesi Island.

The results of the regression analysis showed that the variable hotel occupancy rate (THH) had a fairly large positive coefficient of 8.47, but it was not statistically significant ($t\text{-count } 0.571 < t\text{-table } 2.048$; $\text{sig. } 0.5744 > 0.05$). This means that although the increase in hotel occupancy has the potential to increase PAD, empirically its contribution has not been proven to be significant in the provinces of Sulawesi in the 2017–2021 period.

In theory, the high hotel occupancy rate reflects high tourist activity, which should contribute to PAD through hotel taxes and related levies. However, the results of this study show that there is a gap between the potential acceptance and realization of PAD. This can be caused by several factors. First, the weak hotel tax collection system and the lack of supervision from the local government so that not all residential activities are officially recorded. Second, most of the tourists' accommodation-related expenses can flow to national operators or international online booking platforms, which are not entirely included in the regional revenue. Third, variations in occupancy rates between provinces also cause the contribution of PAD from the hospitality sector to be uneven.

These findings are different from the results of the study Fauzi (2018), which shows that tourist activities, including through formal accommodation, have a positive effect on PAD. However, the results of the study are consistent with the view that United Nations World Tourism Organization (2017), which emphasizes that tourism's contribution to the fiscal is highly dependent on the governance and capacity of local institutions.

Thus, although hotel occupancy rates in Sulawesi show a positive trend towards PAD, the insignificant results indicate the need to strengthen fiscal governance. Local governments need to improve the hotel tax collection system, encourage transaction transparency, and integrate digital platforms (*e-tax* or *e-levy*) to ensure that the increase in hotel occupancy is truly reflected in the increase in PAD.

The Effect of the Number of Tourist Attractions on PAD in the Provinces on the Island of Sulawesi.

The results of the regression analysis showed that the variable number of tourist attractions (JOW) had a positive coefficient of 0.10, but it was not statistically significant ($t\text{-count } 1.361 < t\text{-table } 2.048$; $\text{sig. } 0.1887 > 0.05$). This means that the increase in the number of tourist attractions has not been proven to have a real effect on PAD in the provinces of Sulawesi during the study period.

In theory, more and more tourist attractions should increase the chances of receiving PAD through ticket levies, parking services, and economic activities around the destination. However, the results of this study indicate that the large number of tourist destinations does not automatically contribute to PAD if its management is not optimal. Factors that may explain these findings are: (1) most tourist destinations are still nature-based and traditionally managed so they have not become an official source of retribution; (2) weak recording and supervision of receipts at the regional level; and (3) limited infrastructure facilities that cause tourist attractions to not develop optimally.

This result is different from Fauzi (2018), which found that the number of tourist attractions had a significant positive effect on PAD in Central Java. However, the results of the study are in line with the view Simorangkir *et al.*, (2024), which emphasizes the importance of the quality of destination management in encouraging regional fiscal contributions. Thus, the implication of the policy is that it is not enough for local governments to only increase the number of tourist destinations, but need to strengthen management, innovation services, as well as digitizing the levy system so that the contribution of tourist attractions to PAD can be more optimal.

The Effect of the Number of Tourists on PAD in the Provinces on the Island of Sulawesi.

The regression results showed that the number of tourists (JW) had a negative coefficient of -0.18 and was significant ($t\text{-count } 2.731 > t\text{-table } 2.048$; $\text{sig. } 0.0129 < 0.05$). This means that the increase in the number of tourists actually decreases PAD in the provinces of Sulawesi. Theoretically, this result looks contradictory because the increase in the number of tourists is supposed to increase regional revenue. However, this phenomenon can be explained by the concept of tourism leakage, which is a condition in which tourist spending is not entirely recorded in the official regional revenue (Meyer, 2015; United Nations World Tourism Organization, 2017). Most of the tourists' spending is likely to flow into informal sectors such as stalls, street vendors, local transportation, or non-hotel accommodations, which are not subject to official taxes (Mitchell & Ashley, 2010). Moreover Gollub *et al.*, (2003), emphasizing that weak regional fiscal capacity can cause the potential for tourism revenues not to be recorded optimally.

These results are consistent with research Pham *et al.*, (2022), which found that during the COVID-19 pandemic, the contribution of tourists to regional revenues actually decreased due to weakening fiscal governance and the dominance of the informal sector. Thus, although the number of tourists increases, the impact on PAD can be negative if local governments are unable to formalize tourism economic activities.

The policy implications of these findings are the need for local governments to strengthen fiscal governance, encourage the informal sector to enter the formal system, and digitize the levy system. In addition, tourism development strategies need to be directed at improving the quality of tourist spending that is officially recorded, not just on increasing the number of visits.

CONCLUSION

Based on the Fixed Effect Model (FEM) estimates in six provinces in Sulawesi (2017–2021), this study found that the number of hotels and hotel occupancy rates had a positive but insignificant coefficient, as well as the number of tourist attractions that were positive but not significant, so that tourism capacity/quantity had not been effectively converted into PAD; on the contrary, the number of tourists had a significant negative effect, indicating fiscal leakage (*tourism leakage*) and the dominance of transactions outside the official revenue channel. The implication is that local governments need to strengthen tax/levy collection through digitalization (e-tax, e-ticketing/QRIS), increase compliance and supervision, professionalize destination management and collaborate with local MSMEs, as well as integrate the informal sector into the formal ecosystem to close leakage gaps. Strategically, tourism development must shift from quantity orientation to destination quality, fiscal transparency, the implementation of good governance, and the use of digital technology so that tourism's contribution to PAD becomes more measurable, optimal, and sustainable.

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