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FORECASTING ENTERTAINMENT TAX REVENUE TARGETS USING REGRESSION AND TIME-SERIES ANALYSIS: A CASE STUDY IN SUMEDANG REGENCY

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Abstract:

Local governments in Indonesia are granted fiscal autonomy to manage and optimize regional income sources, including local taxes, as a form of Local Own-Source Revenue (PAD). One such tax is the entertainment tax, which plays a significant role in supporting regional development. This study focuses on identifying key factors that influence entertainment tax revenue in Sumedang Regency, West Java and aims to construct a reliable model for projecting future revenue. Employing a mixed methods approach, the research integrates qualitative analysis—conducted through literature review and document analysis—with quantitative techniques, including multiple linear regression and time-series forecasting. This combination allows for a comprehensive understanding of the determinants of entertainment tax performance and provides a data-driven foundation for more accurate and sustainable fiscal planning at the regional level. The findings indicate that entertainment tax revenue is influenced by the number of entertainment venues, population size, tourist visits, GRDP in the tourism sector, GRDP at current prices (ADHB), BI rate, national inflation rate, and per capita income.

Keywords: Entertainment Tax, Regional Tax Revenue, Tax Forecasting, Fiscal Autonomy.

INTRODUCTION

Regional autonomy refers to the delegation of authority and responsibility from the central government to regional governments to manage local governance and community affairs independently. As both a political and administrative instrument, regional autonomy aims to optimize the use of local resources for the greatest benefit of the region (Ristanti & Handoyo, 2017). The delegation of autonomous authority to local governments is primarily designed to strengthen their capacity in carrying out essential governmental functions, including service delivery, community empowerment, and development (Patarai, 2018). One such tax is the entertainment tax, which reflects both the vibrancy of the local economy and the effectiveness of tax governance. Entertainment tax serves not only as a source of regional revenue but also as a policy instrument to manage consumption behaviour, cultural activities, and tourism development.

Law Number 22 of 2014 on Regional Governance states that each regency or city has the authority to manage governmental affairs, including local financial management, independently. Regional autonomy provides the opportunity for regions to optimize their existing potential, which requires adequate funding, according to Decree No. XV/MPR/1998 of the People's Consultative Assembly, the regulation, distribution, and utilization of national resources and fiscal balance between central and regional governments require the generation of Local Own-Source Revenue (LOSR).

Law No. 33 of 2004 defines LOSR as all revenues earned by the region collected based on local regulations, which include: (1) local taxes; (2) regional retributions; (3) proceeds from the management of regional assets; and (4) other legally authorized local revenues (Yuliati, 2000:97).



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Local taxes defined as compulsory contributions imposed on individuals or entities without direct reciprocal benefits, used to finance general expenditures as mandated by law (Rahayu, 2017).

Law No. 1 of 2022 concerning Fiscal Relations between the Central Government and Regional Governments (HKPD/CGRG) was enacted to improve the financial autonomy regulatory framework. It replaces Law No. 28 of 2009 on Regional Taxes and Retributions. Regional governments are required to enact implementing regulations for the CGRG Law within two years of its enactment on January 5, 2022.

Sumedang Regency, located in West Java, offers a strategic case for examining entertainment tax performance. With its geographical advantage and increasing number of natural tourism destinations, Sumedang has positioned entertainment services as a pillar of its regional development agenda. These contribute not only to tourism but also to the gross regional domestic product (GRDP) of Sumedang. Public infrastructure has been developed to support this growth, including sports arenas and public squares. Though not as advanced as Bandung City, Sumedang benefits from proximity to West Java International Airport (BIJB) in Majalengka, increasing accessibility for both tourism and business travel. Given these potentials, the Sumedang government is optimizing its revenue through local taxes. However, fluctuations in tax revenue over recent years raise critical questions about the determinants of entertainment tax performance and the adequacy of target-setting mechanisms.

Table 1. Sumedang's Entertainment Tax Collection

Entertainment tax collected	2019	2020	2021	2022	2023
In thousand rupiah	4.885.264	995.584	499.254	2.721.750	3.745.011
% of the target	101,78%	62,22%	99,85%	108,87%	124,83%

Entertainment tax revenue in Sumedang Regency during the period of 2019 to 2023 showed generally optimal performance, except in 2020. Entertainment tax revenue exceeded 100% of the target in 2019, 2022, and 2023. Revenue targets were not met in 2020 and 2021 due to the impact of the COVID-19 pandemic, which restricted communal activities. Entertainment tax revenue experienced significant fluctuations, particularly in 2020. That year saw a notable decline in entertainment tax collections. In response to the global economic downturn caused by the COVID-19 pandemic, the Sumedang Regency Government lowered its revenue targets for 2020 and 2021. The tax revenue targets were gradually increased in 2022, followed by a faster growth in actual collections in 2023.

Forecasting local tax revenue in the regional budget (APBD) is critical due to its significant contribution. Based on this urgency, this study seeks to identify variables that significantly influence the projection of entertainment tax revenue in Sumedang Regency and to determine revenue targets based on those variables.

METHODS

Research Type. This study employs a mixed-methods research approach. According to Creswell (2007), mixed methods research is a methodology that combines both quantitative and qualitative data collection and analysis to provide a more comprehensive understanding of a research problem than could be achieved through either method alone. The specific design employed in this study is the sequential explanatory design, in which quantitative data collection and analysis are conducted first, followed by qualitative analysis to interpret, contextualize, and explain the quantitative results. This structure allows the findings from the statistical models to be



enriched and validated through literature-based insights and theoretical interpretations (Saunders, M., Lewis, P., & Thornhill, A., 2019).

According to Sugiyono (2013), a qualitative approach investigates natural object conditions, with the researcher as the key instrument. Data is collected through triangulation (a combination of methods), analyzed inductively, and emphasizes meaning over generalization. The qualitative approach in this study is used to analyze strategies that can be adopted by the Sumedang Regency Government to enhance regional tax and revenue. This includes examining synergistic development efforts to stimulate economic improvement, as well as the planning of alternative development funding strategies and their associated returns and repayments. Meanwhile, the quantitative approach is grounded in positivistic philosophy. It involves collecting numerical data, which is then statistically analyzed to conclude (Sugiyono, 2013).

Population and Sample/Informants. This study focuses on Sumedang Regency, West Java Province, which comprises 26 districts, 270 villages, and 7 sub-districts, covering a total area of 155,871.98 hectares. Based on the data, this regency filled with 1.1 million people in 2024 (Pemerintah Kabupaten Sumedang, 2024). The population supports self-reliance and runs 475 MSMEs.

Research Location. This study focuses on identifying factors that influence the projection of entertainment tax revenues in Sumedang Regency. Accordingly, it uses data that meet parameters capable of uncovering such relationships. The research subjects are the variables represented by financial and other data that correlate with projections of local tax and retribution revenues in Sumedang Regency. The study also seeks to provide recommendations on how the local government may manage controllable variables to enhance entertainment tax revenues.

Instrumentation or Tools. For the qualitative research, the study relied on literature review as the primary instrument to gather theoretical frameworks, policy contexts, and empirical findings from previous research. This method involved the systematic collection and analysis of books, academic journals, government reports, and relevant legislation. Through triangulation, the literature review helped to contextualize the statistical findings, identify relevant economic and administrative factors, and support the formulation of strategic recommendations for local tax policy.

For the quantitative research, the research employed IBM SPSS Statistics as the analytical tool to process numerical data and conduct statistical tests. The software provided an efficient and reliable platform for generating accurate estimations, verifying model assumptions, and assessing the strength and significance of each independent variable in predicting entertainment tax revenue growth.

Data Collection Procedures. Quantitative data were collected from external sources through literature studies and documentation. This includes theoretical references, variable definitions, and previous research. Sources include the Central Bureau of Statistics (BPS), Sumedang Regency Government, and other relevant institutions.

Qualitative data were collected by reviewing books, journals, articles, records, and other documents relevant to the research problem (Rukajat, 2018). It is primarily used to gather secondary data and compare findings from past research to address the research questions. Documentation involves collecting data directly related to the research problem for subsequent analysis (Sugiyono, 2013). Data includes financial statistics, GRDP, and other relevant data on the revenue of local taxes. These support the findings from the literature review.

Data validity in qualitative research ensures objectivity and credibility. In this study, data validity is achieved through triangulation, which involves cross-verifying data with other sources

or perspectives (Sugiyono, 2013). Triangulation was conducted using reliable external sources to strengthen the study's credibility.

Data Analysis; Qualitative Analysis. Literature review data, primarily in the form of textual information from previous research, are analyzed using the following stages (Miles & Huberman, in Sugiyono, 2013):

1. Data Reduction: summarizing and selecting relevant information to focus on key elements and themes;
2. Data Display: presenting data in brief descriptions, diagrams, or tables to facilitate understanding; and
3. Conclusion Drawing and Verification: interpreting the findings to draw conclusions and verify results against the research questions.

Both primary and secondary data were analyzed and interpreted to describe real conditions, understand meanings, and answer research questions.

Quantitative Analysis:

1. Coefficient of Determination (R^2): measures how well the regression model explains the variance in the dependent variable. An R^2 of 1 indicates a perfect fit; an R^2 of 0 indicates no explanatory power;
2. Simultaneous Test (F-test): tests whether all independent variables collectively influence the dependent variable. If the significance level (Sig.) $< \alpha$ (0.10), the variables significantly affect Y;
3. Multiple Linear Regression Analysis: uses the formula: $Y = a + \beta_1X_1 + \beta_2X_2 + \dots + \beta_nX_n + \varepsilon$, where Y = dependent variable, X = independent variables, β = regression coefficients, a = constant, ε = error term;
4. Partial Test (t-test): tests the significance of individual regression coefficients at a 10% significance level;
5. Classical Assumption Tests:
 - Normality Test: assesses whether the residuals follow a normal distribution using histograms and Q-Q plots;
 - Multicollinearity Test: evaluates whether independent variables are highly correlated using the Variance Inflation Factor (VIF). A VIF < 10 and tolerance > 0.10 indicates no multicollinearity;
 - Heteroscedasticity Test: checks for unequal variance of residuals across observations. This is assessed using a scatterplot of residuals versus predicted values. Patterns indicate heteroscedasticity; randomness suggests homoscedasticity.
6. Time-Series Model: forecasting used historical yearly data to calculate confidence intervals, lower and upper bounds, for expected parking tax revenue.

RESULT AND DISCUSSION

Based on a literature review of previous studies, it was identified that for specific goods and services taxes, such as entertainment taxes, several factors significantly influence tax revenue, including the number of entertainment tax objects, the number of visitors, the number of residents, receipt of incentives by the local tax office, and GRDP in the tourism sector.

Local Development Challenges: Focus on Welfare and Economic Equity in Sumedang Regency; GRDP Performance. Despite an increase in nominal GDP, the region experienced declining economic growth, primarily due to consumption-related factors. A comprehensive



strategy to boost GRDP includes horizontally integrated development across local departments, cooperation with neighbourhood regions, and vertical alignment with provincial and central government programs. The initial step is producing a synergy report aligning the Regional Development Plans (RJPM and RJPP) with 2024 development priorities.

GRDP Sectoral Contributions. The agricultural sector's decline stems from limited job creation, weak access to agricultural technology, inadequate and poorly maintained infrastructure, high input costs, and crop failures due to extreme weather. As part of a resource-oriented strategy, the following steps are proposed:

1. Mapping and Specialization: re-categorize agricultural sectors by subdistrict and village based on geographic and land suitability to reduce input and transport costs;
2. Program Synergy: align regional programs with national and provincial initiatives, particularly in agriculture and MSME development;
3. Village-Owned Enterprises (BUMDes/VOE): strengthen local economies through VOE development and eliminate unhealthy competition among MSMEs and between MSMEs and VOE by promoting synergy.

Efforts to improve tourism object development across strategic locations were also identified through development reports and related literature.

GRDP Growth Outlook. Economic downturns due to natural disasters and reduced productivity underline the importance of the previously mentioned development efforts in achieving the targeted GRDP growth.

Inflation Rate. Inflation, caused by rising commodity prices, crop failures, and infrastructural limitations, cannot be directly controlled by the local government. Nevertheless, strengthening Sumedang's local economy could positively influence national economic conditions and contribute to inflation control.

Per Capita GRDP. Underdeveloped business groups, an overreliance on agriculture (with declining productivity), and the underperformance of MSMEs and industrial sectors explain low per capita income. As noted earlier, raising GRDP will also improve per capita income.

Persistent Poverty. Poverty remains high due to limited access to public services and financing, high unemployment, limited job creation, low skill levels, and misaligned or ineffective social assistance.

Human Development Index (HDI). Key challenges include high poverty rates, low per capita income, short life expectancy, and limited expected years of schooling.

The quantitative analysis employs multiple regression analysis using independent variables coded as X1, X2, ..., Xn. The specific variables included in the calculator model are:

Variable Code Description

X1 = GRDP at Current Prices (ADHB)

X29 = Growth in Per Capita Income

X33 = National Inflation Rate

X35 = Bank Indonesia (BI) Benchmark Rate

Table 2. Simultaneous Test (F-Test)

ANOVA ^a						
	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.491	4	2.623	2010.275	.000 ^b
	Residual	.007	5	.001		
	Total	10.497	9			



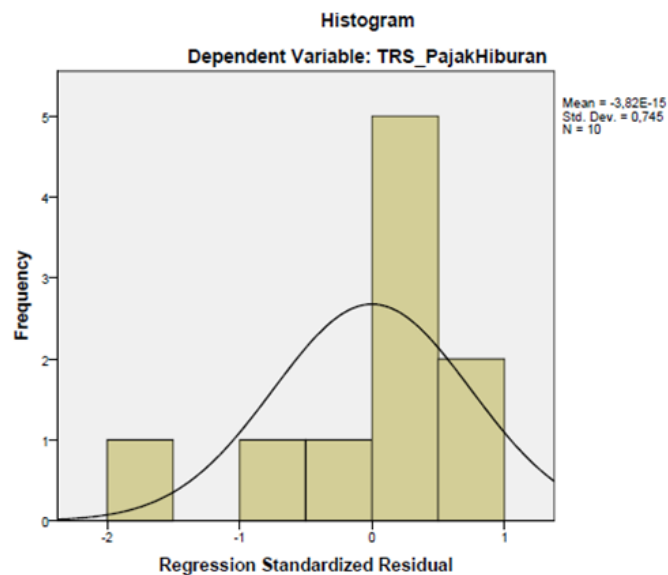


Figure 1. Normality Test

Multicollinearity Test. VIF values for all variables are below 10 with tolerance above 0.10, confirming no multicollinearity.

Table 4. Multicollinearity Test

Model	Correlations			Collinearity Statistics	
	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)					
(X1) GRDP ADHB Sumedang Regency	.361	.999	.729	.729	1,373
(X35) BI Rate	-.502	-1,000	-.848	.665	1,504
TRS_National Inflation	-.291	-.995	-.241	.526	1,900
TRS_Per Capita Income	-.383	-.985	-.143	.570	1,754

Heteroscedasticity Test. Scatterplots show no discernible pattern, indicating homoscedasticity.

Time-Series Forecasting Model. In addition to multiple regression, time-series forecasting was used with seasonal adjustments (e.g., general election cycles every five years). This approach enables forecasting future values within confidence intervals (lower and upper bounds).

Table 5. Result of Sumedang's Entertainment Tax Collection Forecasting

Years	Forecast	Lower Confidence Bound	Upper Confidence Bound
2024	3.526.017.738	1.689.379.727	5.362.655.750
2025	1.872.174.908	-425.828.451	4.170.178.267
2026	2.030.956.911	-651.108.789	4.713.022.610
2027	3.354.280.556	335.801.326	6.372.759.787
2028	4.395.675.176	1.073.921.493	7.717.428.859

Interpretation of Key Findings. This study finds that GRDP at current prices (ADHB), Bank Indonesia (BI) benchmark interest rate, national inflation rate, and per capita income have statistically significant effects on the growth of entertainment tax revenue in Sumedang Regency.



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