Sustainable Mobility, Maritime, Airport, and Regional Government Revenue and Expenditure (APBD)

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Abstract. Commercial and development-centered airports, or aerotropolis, develop together that results in "economies of speed." There are two-hundred ninety-six (296) official airports in Indonesia, which is the most in ASEAN. PT Angkasa Pura I and PT Angkasa Pura II each manages thirteen (13) airports; the National ARMY operates fifty-three (53) airports, the Ministry of Transportation Airport Operator Unit manages one-hundred seventy-eight (178) airports, and the Local Government UPT oversees thirty-nine (39) airports. The research aims to find factors that influence regional government revenues and expenditures. The analysis begins with the coefficient of determination, a measure of the total variation in non-independent variables that could be explained by its relationship with the independent variable. Then, multiple linear regression analysis is used to determine the effect of airport performance variables on regional government revenues and expenditures (APBD) variables, using the multiple linear regression formula. The conclusion is that the input variables that have the most influence on regional government revenues and expenditures (APBD) are: (1) number of passenger departures, (2) number of passenger arrivals, (3) unloading baggage, and (4) baggage loading.

1. Introduction

Commercial and development-centered airports, or aerotropolis, develop together that results in "economies of speed"[1]. Changi Airport recorded a high-growth of airport concessions and rental income of 7.2%, year-on-year, to S $ 1.1 billion in 2016. It was supported by strong retail sales that put Changi Airport as one of the top three airports in the world, for concession sales. The number of passengers increased by 5.1%. Strong marketing and promotion, as well as new retail offers, and refresher renovations were helping to increase retail sales. The opening of innovative retailers, such as the Spanish giant, Zara, and Shilla Beauty Loft, allowed Changi Airport to subsidize and maintain competitive flight costs. Malaysia Airport recorded an increase of free duty and non-dutiable goods by 17.7% and hotel revenue by 2.2%. Revenues from commercial aeronautical activities, commercial space rental, free duty shop, and free non-duty store, food and beverage outlets, parking facilities, aerodrome, the advertising business, hotel, and free Commercial Zone at KLIA (Kuala Lumpur International Airport) was RM 1,110 million in 2016. Revenues from free-duty and non-dutiable goods reached RM 740 million. Meanwhile, revenues from non-airport operating income and hotel reached RM 259 million and RM 92 million, respectively, as reported by Nasution et al. [2]. The first stage of the development of Panatropolis, of Tocumen Airport, in the area of 330 hectares, is to build...
the area of logistics, distribution, and light manufacturing centers, which are integrated with international business centers and residential areas. The international business center, which consists of office complexes, business-specific hotels, meeting, trading, and exhibition facilities, is the ambitious hub of the business [1-11]

The steps in determining and supervising the regional government revenues and expenditures are:
1. Formulating policies in terms of preparing local government revenue, expenditure, financing budget, cost standard, and non-tax revenue;
2. Implementing policies in terms of preparing regional government revenue, expenditure, financing budget, cost standard, and non-tax revenue;
3. Formulating norms, standards, procedures, and criteria for preparing regional government revenue, expenditure, financing budget, cost standard, and non-tax revenue;
4. Providing technical guidance and supervision for preparing regional government revenue, expenditure, financing budget, cost standard, and non-tax revenue;
5. Performing monitoring, evaluation, and reporting for preparing regional government revenue, expenditure, financing budget, cost standard, and non-tax revenue;
6. Implementing administration and other functions assigned by the regional government [12-16]

2. Literature Review

The actual revenues and expenditures of the Provincial Government are the realization of provincial budget calculations for every fiscal year. Revenues consist of a. Locally-generated Revenue, b. Balanced Budget, c. Other Legal Revenue. [12-16]

The locally-generated revenues are those that are withheld based on local regulations, which is the legislation for financing their activities. Regional Government Income consists of local taxes, retributions, the income of regional government’s companies, and the management of separated regional government wealth and other local government revenues. Local Taxes are revenues that are based on local laws and regulations, which can be divided into two categories: a. those that are set up by local rules, and b. local taxes that are managed and used by the local government. Local taxes consist of motor vehicle tax, title transfer tax, motor vehicle fuel tax, and others. Retributions are levies following any services or facilities provided by the local government directly to taxpayers. Retributions include health care, testing of motor vehicles, the replacement cost of printing maps, fishing vessel testing, the use of regional assets, wholesale or retail markets, the sale of local production, the land use designation permits, licenses route of public transport, and others. The income of Regional Government Corporate and Management of Separated Regional Government Wealth consists of the regional water company's earnings, the profit share of the bank, the profit share of non-banking financial institutions, the other locally-owned company's profits, and the return on equity/investment from a third party. Other locally-generated revenues are the government revenues that include the sale of regional assets that cannot be separated by the current account’s services, interest income and commissions, discounts, or other forms, as the results of the sale, and/or supply of goods and/or services by the region. [12-16]

The Balanced Budget is the fund of the state budget that is allocated to regions to fund their needs in the context of decentralization. The balanced budget consists of Tax share/non-tax share, General Allocation Fund (DAU), and the Special Allocation Fund (DAK). Tax share consists of land and building tax (PBB), customs of land and buildings right (BPHTB), income tax of Article 25 and Article 29, and Article 21 of the Personal Income Tax, and others. Non-Tax Share consists of dues of the utilization right of forest (HPH), Provision of Forest Resources (PSDH), Land Titling State, Land Rent, Dues of Exploration/Exploitation/Royalties, Levies on Fishery Enterprise, and the result of the fishery, mining oil/gas nature result, and others. General Allocation Fund (DAU) is the transfer of funds from the central government to the local government. It is intended to reduce the fiscal gap across regions and the equalization of fiscal capacity to support the independence of local governments in carrying out its functions and duties to serve the public. Special allocation fund (DAK) is a fund set up to the region to meet a specific need. There are three criteria for a special need, as set out in the legislation, which is: a. The need cannot be calculated by using the formula of the general allocation fund, b. The need is a commitment or a national priority, c. The need is to finance reforestation and afforestation of the region. Therefore, DAK is a specific transfer for the purposes that have been outlined. [12-16].
Other Revenues are other income that comes from the central government, and/or the central agencies, as well as other local government. Other Revenues comprise grants, emergency fund, which is a fund of the state budget allocated to areas that experience national disasters and extraordinary events and/or solvency crisis, tax share from provincial and other local governments, contingency funds/balancing/adjustment from government, financial assistance from provincial and other local governments, and other legal income. [12-16]

Local Government Expenditures consist of Indirect Expenditures and Direct Expenditures. Indirect expenditures are parts of personnel expenditures interest, subsidies, grants, social assistance, sharing fund, financial assistance, and unpredicted expenditures. Those items are not directly related to the implementation of programs and activities. [12-16]

Indirect Personnel Expenditures are compensations in the form of salaries and benefits, and other income of civil servants based on legislation includes representations and benefits for head and the members of parliament, salaries and benefits of regional head and deputy head of the region, as well as those that are under the budgeted law. The Interest Expenditures are expenditures used to pay debt interests that are calculated based on the principal amount of the short-term, medium-term, and long-term agreement. Subsidies Expenditures are expenditures that are budgeted and used to support the cost of production to the specific companies or organizations so that the selling price of the goods/services can be affordable. The intended companies or agencies must provide products or services for public/society needs. Grant Expenditures are expenditures that set out to give to other parties as a grant, both in the form of money, goods, and/or services. The grant can be given to the central government, other local governments, the village government, regional corporate/state/enterprise, agency/institution/organization, or community group/individual. Social Assistance Expenditures are expenditures that are budgeted to assist civil society organizations, political parties, and others in improving the welfare of the community. Social Assistance to Community Organizations is the provision of assistance to community organizations for social purposes. This assistance is done selectively, and it has clarity in its use. Sharing Fund Expenditures to Provincial/District/City and Village Government are expenditures that are budgeted as sharing funds from provincial revenues, and given to districts/cities, villages, or a particular local government. The expenditures consist of a. Tax shares expenditure to the provincial government, b. Local tax shares expenditure to the city, c. Local tax shares expenditure to the village government, d. Local retribution shares to the city, e. Local retribution shares to the village government. Financial Assistance Expenditures to Provincial/District/City and Village Governments are general or specific assistance from the provincial government to the district/city, village government, or other local governments to equalize and increase the financial capability of the recipients. General financial assistance is assistance from the local government where the recipient government does the use and the management of funds delivered. Specific financial assistance is the assistance where the donor government directs the used and the management of the fund. Financial Assistance consists of a. The financial assistance to the provincial government, b. Financial assistance to city government, c. Financial assistance to the village government; d. Financial assistance to local government/other village government, e. Financial assistance to the Political Party. Unpredicted Expenditures are expenses used for the activity that is unusual or unexpected such as natural disaster and social disaster, includes a refund of the excess revenue from the previous years. [12-16].

Direct Expenditures are parts of personnel, goods and services, and capital expenditures that are directly budgeted to implement programs and activities. Direct Personnel Expenditures are expenses used for honorarium/wages, overtime, and other expenses to increase employee motivation and quality in implementing government programs and activities. Goods and Services Expenditures are expenses used for purchasing/procurement of goods that are classified as non-durable goods and or the use of services in carrying out the programs and activities of the local government. Purchasing procurement of the goods and services are for non-durable goods, materials, office services, insurance premiums, vehicle maintenance, printing, and copying, building rent, vehicle rent, heavy equipment rent, the lease of office supplies and equipment, food and beverages, uniforms, official journey, travel duty, returning officers and other goods and services. Capital Expenditures are expenses used for purchasing/procurement of a tangible fixed asset that worth more than a year (durable goods). The
establishment of the assets includes the provision of land, heavy equipment, transportation equipment, workshop tools, agricultural processing, and maintenance equipment, equipment and office supplies, computers, household appliance, studio equipment, communication tools, measuring tools, transmitting equipment, medical equipment, laboratory equipment, school practice tools, construction of roads, bridges, water installations, street lighting, parking area and urban forests, electric and telephone installations, waste management, buildings, books/literature, arts, animal procurement/livestock and plants, procurement of BLUD and JKN as well as weapons/security. Local Government Financing is any revenue that needs to be paid back, and/or an expenditure that will be redeemed both in the current fiscal year and in the next fiscal years. Net financing is the difference between financing revenues and financing expenditures. Total net financing should cover the budget deficit. The other way around, budget surplus would be allocated to finance expenses, whether for payment of principal, as well as for investment or the creation of a reserved fund. Local government financing consists of 1. Local government financing receipt: 1.a. Last fiscal year surplus budget, 1.b. Transfer from the reserved fund, 1.c. Receipt from loans and bonds, 1.d. The income of separated selling assets; 2. Local government financing expenditure; 2.a. Transfer to reserved fund; 2.b. Equity; 2.c. Principal Payment of the debt, 2.d. Current fiscal year budget surplus. Last Fiscal Year Budget Surplus is last fiscal year surplus/deficit plus the financing receipt less financing expenditure. Reserved Fund Disbursement is revenue from the disbursement of the reserve fund, i.e., from reserved fund account to general cash account throughout the current fiscal year. The income of Separated Property Sales Results is the selling of government assets through third-party or the income of local government divestment of equity. Local Government Revenues from Loan are revenues from the loans, include the issuance of local debts that are issued in the current fiscal year. Revenues from Lending are all revenues obtained from lending to the central government and/or to other local governments. The establishment of the Reserve Fund is expenditures to establish a reserved fund to finance activities that the provision of funds cannot be fully implemented in one fiscal year. Equities (Investments) of Local Government are government expenses allocated to equity/investment, both in the short and long term, permanent or non-permanent. These investments can be in the form of deposits, the purchases of government securities (GS), Bank Indonesia Certificates (SBI), Treasury Bills (SPN), shares, investments in the state/public enterprises, purchase of bonds and long-term debt. Payment of the Principal of Debt is the payment that is calculated based on the short, medium, and long-term agreement. Regional Lending is government spending in the form of lending to the central government, local government, and/or third parties. Current Fiscal Year Budget Surplus is a surplus/deficit added by the financing receipt subtracted by financing expenditure. [12-16]

3. Methodology
Airplane arrival (X1), airplane departure (X2), passenger departure (X3), passenger arrival (X4), unloading baggage (X5), loading baggage (X6), unloading cargo (X7), and loading cargo (X8) are factors that affect airport performance. [17-26].

The analysis begins with the coefficient of determination, a measure of the total variation in non-independent variables that could be explained by its relationship with the independent variable. The coefficient of determination is also referred to as R2. The value of R2 is between 0 and 1.0. If the linear relationship is perfect between two variables, the coefficient of determination would be 1.0 (where the least-squared regression line would go through each point of the scatter plot). R2 is used as a measure to indicate how well a linear regression line against data. The value of R2, which is closest to +1.0, shows a strong linear relationship, while the value of R2 that is closest to 0 shows a weak linear relationship. Multiple linear regression analysis is used to determine the effect of variable airport performance on regional government revenue and expenditure (APBD) variables, using the multiple linear regression formula. The analysis by using software SPSS version 20 finds the regression coefficient [17-26].

Autoregressive exogenous input (ARX) is a modeling structure (Figure 1). The ARX modeling technique is a successful method for completing the identification system (Kumar, 2013). ARX could map input data (u) and output data (y) that are available based on the desired order model. In general, AR is the Auto-Regressive nature of a model, while X is an exogenous input. The relationship
between the input-output of the ARX models is showed by the equation [17-26], so using ARX modeling analysis give better and stronger result than linear regression analysis or path modeling analysis.

![Figure 1. Autoregressive Exogenous (ARX) modeling](image)

ARX could map input data (u) and output (y) that are available based on the desired order model. In general, AR is the Auto-Regressive nature of a model, while X is an exogenous input. The relationship between the input-output of the ARX models could be represented by the following equation:

\[ Y(t)+a_1 y(t-1)+\cdots+a_n y(t-n_a )=b_0 u(t-d)+\cdots+b_n b_u (t-d-n_b )+e(t) \]  

(1)

Where y (t), u (t), and e (t) is output, the input and error process, n_a is an autoregression, n_b is an exogenous regressor. The structure of the ARX model can be displayed as follows:

\[ A (q) * y (t) = B (q) * u (t) + e (t) \]  

(2)

Where:

- A (q)= 1 + a1q-1 + a2q-2 + .... + anaq-na
- y (t) = output
- B (q)= b1 + b2q-1 + b3q-2 + ... + anbq-nb + 1
- u (t) = input
- e (t) = error

While predicting the output of the ARX model at time t is found in equation 3

\[ y (t) = F (x (t)) \]  

(3)

where:

- y (t) = prediction
- x (t ) = regressor
- F = nonlinear function

The ARX model is an analytical form, which is the simplest and most efficient estimation method, with a unique solution. It is preferred for higher-order models. The selection of the structure is based on the value of accuracy (Best-Fit).

4. Result and Discussion
The coefficient of determination analysis shows the best 6 variables, which are Local Government Retributions (R2 value = 0.386), Tax Share from Provincial and Other Local Governments (R2 value = 0.307), Unpredicted Expenditures (R2 value = 0.270), SILPA (R2 value = 0.242), Other Locally-generated Revenue (R2 value = 0.229), and Local Government Financing (R2 value = 0.226). The most significant factor that affects airport development is Local government retributions, with an R2 value of 0.386, or 38,6%.

Figure 2, describe Normal P-P Plot of Regression Standardized Residual of Local government retributions, where the most significant factor that affects airport development is Local government retributions, an R2 value of 0.386, or 38,6%.
Figure 2. Normal P-P Plot of Regression Standardized Residual of Local government retributions

The Exogenous Autoregressor (ARX) model to find the relationship between input-output systems could be used for some types of systems, which are either MIMO or MISO. Of the eight input variables (X1, X2, X3, X4, X5, X6, X7, X8), then the linear and non-linear influences are identified where the 'black box' process will search variables that influence each other to produce an output. The identification of input-output relationships is carried out by trial error, which is started by inputting one input, two inputs, up to eight inputs. The eight input variables would then be selected for the inputs that influence the Y variable (Y1, Y2, Y3) the most. The next process is to determine input data as independent variables and output data as a dependent variable.

Initiation is also carried out in determining the input data that would be used for estimation and validation. In the ARX process, 104 data are used, while the data used for validation initiation is 83. Determining the value of n_a as an autoregression, n_b as an exogenous regression, and delay, n_k, the right one would determine the correct Fitness value. Initialize the values n_a, n_b, and n_k is determined by trial error. The best trial error results are obtained by entering n_a by 8, n_b by 2, and n_k by 1. The estimated Fitness Value is 90.01%, while fitness validation is 89.93%. The Fitness value (Best-Fit) is found from the comparison between the output validation data and the output response of the modeling. It shows that out of 83 data used for validation, 89.93% or 74 validation data show the same magnitude. The fit is quite good. The limited amount of data available means that 56 of the same 74 data are quite good. The details of estimation models are obtained from processing data using ARX displayed as follows:

\[ A(z) = 1 + 0.02157z^{-1} + 0.006686z^{-2} - 0.03222z^{-3} + 0.008498z^{-4} - 0.01643z^{-5} - 0.07136z^{-6} - 0.01231z^{-7} + 0.03496z^{-8} \]  

\[ B1(z) = 3.52e05z^{-1} - 1.777e05z^{-2} \]

\[ B2(z) = -1.084e05z^{-1} + 1.562e05z^{-2} \]

\[ B3(z) = -1.493e05z^{-1} + 3.08e05z^{-2} \]

\[ B4(z) = 4.178e04z^{-1} - 3.03e05z^{-2} \]

Polynomial orders: na = 8 nb = 2 nk = 1

Estimation: 90.01
Validation: 89.93 6.155e + 07 3.42e + 07

In equation 2 the output-input relationship (y(t) / u(t)) is obtained, as in equation 5
ARX \( = \frac{y(t)}{u(t)} = \frac{(B(q))}{(A(q))} \) \( (4) \)

Discrete-time ARX model: \( A(z) y(t) = B(z) u(t) + e(t) \) \( (5) \)

For the Regional Income and Expenditures Budget’s output, \( B \) is 4, so four transfer functions are formed for each input. The transfer function for the first input, the second input, the third input, and the fourth input, in units of \( z \) (discrete) respectively participated in equation 6, 7, 8, and 9:

\[
\frac{y(z)}{u(z)} = \frac{(3.52e05 \ z^{-1} - 1.777e05 \ z^{-2})/(1+0.02157 \ z^{-1}+0.006686 \ z^{-2} - 0.03222 \ z^{-3} + 0.008498 \ z^{-4}-0.01643 \ z^{-5} - 0.07136 \ z^{-6} - 0.01231 \ z^{-7}+0.03496 \ z^{-8})}{(6)}
\]

\[
\frac{y(z)}{u(z)} = \frac{(-1.084e05 \ z^{-1} + 1.562e05 \ z^{-2})/(1+0.02157 \ z^{-1}+0.006686 \ z^{-2} - 0.03222 \ z^{-3} + 0.008498 \ z^{-4}-0.01643 \ z^{-5} - 0.07136 \ z^{-6} - 0.01231 \ z^{-7}+0.03496 \ z^{-8})}{(7)}
\]

\[
\frac{y(z)}{u(z)} = \frac{(-1.493e05 \ z^{-1} + 3.08e05 \ z^{-2})/(1+0.02157 \ z^{-1}+0.006686 \ z^{-2} - 0.03222 \ z^{-3} + 0.008498 \ z^{-4}-0.01643 \ z^{-5} - 0.07136 \ z^{-6} - 0.01231 \ z^{-7}+0.03496 \ z^{-8})}{(8)}
\]

\[
\frac{y(z)}{u(z)} = \frac{(4.178e04 \ z^{-1} - 3.03e05 \ z^{-2})/(1+0.02157 \ z^{-1}+0.006686 \ z^{-2} - 0.03222 \ z^{-3} + 0.008498 \ z^{-4}-0.01643 \ z^{-5} - 0.07136 \ z^{-6} - 0.01231 \ z^{-7}+0.03496 \ z^{-8})}{(9)}
\]

Discrete equations in \( z \) units will be changed to units of continuous functions as in equations 10 to 14:

\[
A(s) y(t) = B(s) u(t) + C(s) e(t) \)

\[
\frac{y(s)}{u(s)} = \frac{(2.756e16+1.216e14 \ s+ 2.263e13 \ s^2+ 2.402e12 \ s^3+ 1.616e11 \ s^4+ 7.661e09 \ s^5+ 2.085e08 \ s^6+ 4.6e06 \ s^7)/(1.485e09+5.985e08 \ s+ 1.022e08 \ s^2+ 1.031e07 \ s^3+ 8.39e05 \ s^4+ 3.725e04 \ s^5+ 1804 \ s^6+ 33.53 \ s^7+ s^8)}{(10)}
\]

\[
\frac{y(s)}{u(s)} = \frac{(7.558e13-3.745e12 \ s- 4.329e12 \ s^2- 6.884e11 \ s^3- 5.625e10 \ s^4-3.03609 \ s^5-8.832e07 \ s^6- 2.105e06 \ s^7)/(1.485e09+5.985e08 \ s+ 1.022e08 \ s^2+ 1.031e07 \ s^3+ 8.39e05 \ s^4+ 3.725e04 \ s^5+ 1804 \ s^6+ 33.53 \ s^7+ s^8)}{(11)}
\]

\[
\frac{y(s)}{u(s)} = \frac{(2.509e14+2.567e13 \ s- 3.545e12 \ s^2- 9.011e11 \ s^3- 8.339e10 \ s^4- 4.8e09 \ s^5-1.437e08 \ s^6-3.53e06 \ s^7)/(1.485e09+5.985e08 \ s+ 1.022e08 \ s^2+ 1.031e07 \ s^3+ 8.39e05 \ s^4+ 3.725e04 \ s^5+ 1804 \ s^6+ 33.53 \ s^7+ s^8)}{(12)}
\]

\[
\frac{y(s)}{u(s)} = \frac{(-4.131e14-7.918e13 \ s- 4.652e12 \ s^2+ 1.426e11 \ s^3+3.718e10 \ s^4+ 2.789e09 \ s^5+9.177e07 \ s^6+2.459e06 \ s^7)/(1.485e09+5.985e08 \ s+ 1.022e08 \ s^2+ 1.031e07 \ s^3+ 8.39e05 \ s^4+ 3.725e04 \ s^5+ 1804 \ s^6+ 33.53 \ s^7+ s^8)}{(13)}
\]

And the constant is as in equation 15:

\[
C(s) = s^8 + 38.35 \ s^7 + 1809 \ s^6 + 4.117e04 \ s^5 + 8.296e05 \ s^4 + 1.087e07 \ s^3 + 1.011e08 \ s^2 + 5.897e08 \ s + 1.581e09
\]

(15)
The overall transfer function as in equation 16

\[ y(s) = \frac{(2.756e16 + 2.263e13 s + 2.402e12 s^2 + 1.616e11 s^3 + 7.661e09 s^4 + 2.085e08 s^5 + 4.6e06 s^6 + 1.216e14 s^7)}{(1.485e09 + 5.985e08 s + 1.031e07 s^2 + 8.39e05 s^3 + 3.725e04 s^4 + 1804 s^5 + 33.53 s^6 + s^7)} u_1(s) \]

\[ + \frac{(7.558e13 - 3.745e12 s - 4.329e12 s^2 - 6.884e11 s^3 - 5.625e10 s^4 - 3.036e09 s^5 - 8.832e07 s^6 - 2.105e06 s^7)}{(1.485e09 + 5.985e08 s + 1.031e07 s^2 + 8.39e05 s^3 + 3.725e04 s^4 + 1804 s^5 + 33.53 s^6 + s^7)} u_2(s) \]

\[ + \frac{(2.509e14 + 2.567e13 s - 3.545e12 s^2 - 9.011e11 s^3 - 8.339e10 s^4 - 4.8e09 s^5 - 1.437e08 s^6 - 3.53e06 s^7)}{(1.485e09 + 5.985e08 s + 1.031e07 s^2 + 8.39e05 s^3 + 3.725e04 s^4 + 1804 s^5 + 33.53 s^6 + s^7)} u_3(s) \]

\[ + \frac{(-4.131e14 + 7.918e13 s - 4.6523e12 s^2 + 1.426e11 s^3 + 3.718e10 s^4 + 2.789e09 s^5 + 9.177e07 s^6 + 2.459e06 s^7)}{(1.485e09 + 5.985e08 s + 1.031e07 s^2 + 8.39e05 s^3 + 3.725e04 s^4 + 1804 s^5 + 33.53 s^6 + s^7)} u_4(s) \]

\[ + \frac{1.581e09 + 5.897e08 s + 1.011e08 s^2 + 1.087e07 s^3 + 8.296e05 s^4 + 4.117e04 s^5 + 1809 s^6 + 38.35 s^7 + s^8)}{(1.485e09 + 5.985e08 s + 1.031e07 s^2 + 8.39e05 s^3 + 3.725e04 s^4 + 1804 s^5 + 33.53 s^6 + s^7)} \]

Figure 3 describe the estimated Fitness Value is 90.01%, fitness value (Best-Fit) is found from the comparison between the output validation data and the output response of the modeling, the fit is quite good, due to the limitation of available data, 56 of 74 data are quite good.

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**Figure 3.** Estimated output of Regional Asset Management (APBD)

Figure 4 describe fitness validation is 89.93%, fitness value (Best-Fit) is found from the comparison between the output validation data and the output response of the modeling, it shows that out of 83 data used for validation, 89.93%, or 74 validations show the same magnitude, the fit is quite good, due to the limitation of available data, 56 of 74 data are quite good.
5. Summary
Based on the above function, the conclusion is that the input variables that have the most influence on locally-generated Revenues are (1) passenger departure, (2) passenger arrival, (3) unloading baggage, and (4) loading baggage.

The estimated Fitness Value is 90.01%, while fitness validation is 89.93%. Fitness value (Best-Fit) is found from the comparison between the output validation data and the output response of the modeling. It shows that out of 83 data used for validation, 89.93%, or 74 validations show the same magnitude. The fit is quite good. Due to the limitation of available data, 56 of 74 data are quite good.

The coefficient of determination analysis shows the best 6 variables, which are Local Government Retributions (R2 value = 0.386), Tax Share from Provincial and Other Local Governments (R2 value = 0.307), Unpredicted Expenditure (R2 value = 0.270), SILPA (R2 value = 0.242), Other Locally-generated Revenue (R2 value = 0.229), and Local Government Financing (R2 value = 0.226). The most significant factor for airport development is Local Government Retributions with an R2 value of 0.386 or 38.6%, even though the relationship is not strong.

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