Extended abstract

FORECASTING PASSENGER AMOUNT OF AIR TRANSPORT COMING FROM OVERSEAS IN SOEKARNO HATTA AIRPORT BANTEN

Jimmy Ludin

Education And Training Center Statistics, Jakarta, E-Mail: jimmy.ludin@gmail.com

Introduction

Data on air transport traffic is very important to anticipate developments and plan the construction of facilities and infrastructure and human resources in the field of aviation (Santoso, 2018). Flight activities at airports can provide an overview of the development of air transportation in Indonesia (BPS, 2017). One of the airports in Indonesia is Soekarno Hatta International Airport in Banten province. The Soekarno Hatta International Airport plays a central role in aviation transport for the Jakarta Metropolitan Area domestic and international air transport (ITOCHU Corp, 2012).

This study intends to provide an overview of the development of traffic for passenger transportation coming from abroad at Soekarno Hatta International Airport. In addition, predictions will be made on the number of passengers per month in 2019 by using one method of periodic data analysis, the ARIMA method.

Method

The data used is data on the number of passengers per month coming from abroad at the Soekarno Hatta International Airport in Banten Province from 2012 - 2018. For 2018 data available only until November. Data sources were obtained from the publication of BPS "Economic Indicators" from 2012 - 2018.

To estimate and predict the number of passengers per month, the Autoregressive Integrated Moving Average (ARIMA) method is used. An autoregressive integrated moving average (ARIMA) model is fitted to time series data either to better understand the data for predict future points in the series (forecasting) (Makridakis, 1999).

Important Findings and Discussion

The average number of air transport passengers per month coming from abroad at Soekarno Hatta airport from 2012 to 2018 fluctuated and increased. The average number of passengers per month in 2012 was 488.1 thousand passengers with a standard deviation of 39.10 thousand passengers, while in 2018 the average number of passengers increased to 629.74 thousand passengers with a standard deviation of 48.81 thousand passengers.

The average air transport passenger per month coming from abroad at Soekarno Hatta airport from year to year has increased. In 2017 the average passenger per month is 604.67 thousand people with a standard deviation of 58.3 thousand people and in 2018 the average number of passengers per month rises to 626.72 thousand people with a standard deviation of 50 thousand people.
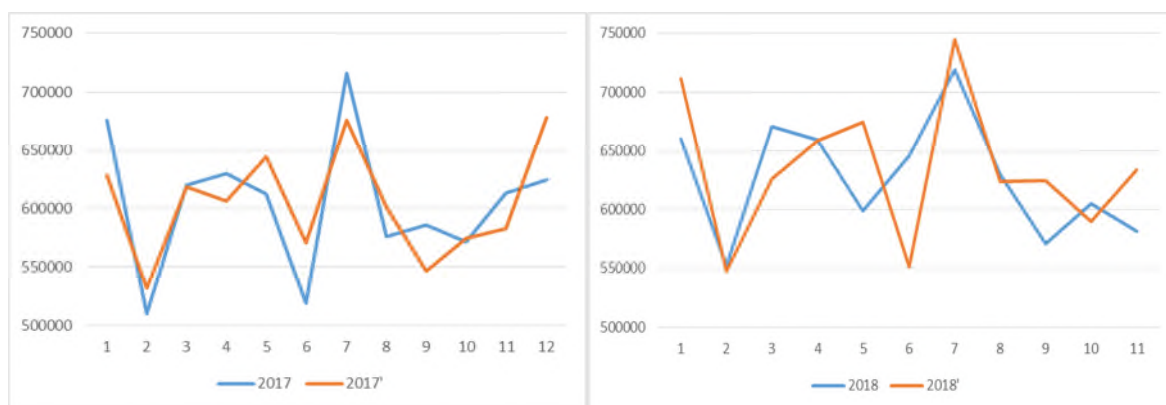
Fig 1. Data on Number of Passengers and Estimated Data for 2017 and 2018.

The estimated average passenger for 2017 is 605.07 thousand people. The difference in estimated value with actual value is only 400 passengers per month. In 2018, the estimated average passenger per month is 635 thousand passengers. The difference between the estimated value and the actual value is 8.2 thousand passengers per month.

Table 1. Descriptive Statistics.

Descriptive	2017	2017'	Gap 2017	2018	2018'	Gap 2018	2019'
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mean	604.666,92	605.067,31	400,39	626.722,45	635.004,07	8.281,62	650.629,05
Std Dev	58.307,76	46.715,87		50.000,72	60.800,25		49.355,15
Minimum	510.121,	531.469,6	21.348,6	551.777,	547.308,8	-4.468,2	562.268
Maximum	716.064,	677.934,1	-38.129,9	718.827,	744.404,6	25.577,6	749.354
Sum	7.256.003,	7.260.807,7	4.804,7	6.893.947,	6.985.044,8	91.097,8	7.807.548,6
Count	12	12		11	11		12

Information:

2017 '= 2017 estimate; 2018 '= Estimated 2018; 2019 '= Prediction in 2019

From the estimation results, it can be said that the difference between the estimated results data and actual data is very small, which is only about 0.07 percent in 2017 and 1.32 percent in 2018. So the ARIMA method is very well used to estimate data on the number of transport passengers air coming from abroad to Soekarno Hatta airport.

For 2019, the predicted number of passengers is 7.81 million passengers. The average passenger per month is 650.63 thousand passengers with a standard deviation of 49.35 thousand passengers. The minimum number of passengers is expected to occur in February, which is around 562.27 thousand

passengers, while the maximum number of passengers is estimated to occur in the month of 749.35 thousand passengers. Prediction data in 2019 can be seen in the table and figure below.

Table 2. Forecast Passenger 2019.

Month	2019'
January	701.228
February	562.268
March	681.777
April	678.525
May	636.212
June	622.610
July	749.354
August	638.486
September	609.563
October	622.253
November	627.218
December	678.055

Conclusion

The average number of air transport passengers per month coming from abroad at Soekarno Hatta airport from 2012 to 2018 fluctuated and increased. ARIMA method can estimate data on passenger numbers very well, the difference is only around 0.07 percent in 2017 and 1.32 percent in 2018.

For 2019, the number of passengers is predicted to increase compared to 2018, which is 7.81 million passengers with an average passenger per month of 650.63 thousand passengers. The minimum number of passengers is expected to occur in February, which is around 562.27 thousand passengers, while the maximum number of passengers is estimated to occur in July, reaching 749.35 thousand passengers. In the face of an increase in the number of passengers that are expected to occur in 2019, the government can make adjustments by preparing various policies and programs in order to provide good service to the community.

References

BPS, 2016, *Air Transportation Statistics 2017*, BPS, Statistics Indonesia

ITOCHU Corp, 2012, *Study On Soekarno Hatta International Airport Expansion And Upgrading Project In Jakarta In The Republic Of Indonesia*, Japan Economic Research Institute Inc

Makridakis, S., 1999, *Metode dan aplikasi Peramalan*, Jakarta, Bina Rupa Aksara

Santoso, A., 2018, *https://finance.detik.com/berita-ekonomi-bisnis/d-3933323/ kemenhub-minta-bandara--maskapai-laporkan-data-secara-online*