

Study of Aircraft Movement, Passenger and Goods in The Time of the COVID-19 Pandemic

Mulyadi Nur^{1,*}, Fatmawati Sabur¹, Muhammad Yahya², Darlan Sidik²

¹Makassar Aviation Polytechnic, Makassar 90243, South Sulawesi, Indonesia

²Makassar State University, Makassar 90222, South Sulawesi, Indonesia

*Corresponding author. Email: mulyadi.nur@poltekbangmakassar.ac.id

ABSTRACT

The movement of passengers and goods using the air transportation mode during the COVID-19 pandemic has had a decreasing impact with Restrictions on Community Activities in Eastern Indonesia, especially Makassar, which can be seen from the number of aircraft, passengers, baggage, and cargo movements. This study aimed to determine the impact of the COVID-19 pandemic on the movement of passengers and goods at Sultan Hasanuddin Airport Makassar. The type of research used is a case study using an embedded single-case design, with secondary data originating from air transport traffic statistics reports from 2016 to 2020, the research population in the form of aircraft, passenger, baggage, and cargo movement data in 2016. until 2020 while the total sample is from 2016 to 2020, data collection techniques derived from air transport traffic statistics reports at airports Sultan Hasanuddin Makassar secondary data collection instrument, the data analysis technique used in this study is using the SPSS program. The results of the study of aircraft movement research in 2016 to 2020, namely in 2016 the number of aircraft movements was 100.633 in 2017 were 113.915, in 2018 was 117.130, the beginning of the COVID-19 pandemic in 2019 was 96.229 and in 2020 was 64.505 as well as the number of movements of passengers, baggage, and cargo at Sultan Hasanuddin Airport Makassar. Thus, it can be concluded that the movement of aircraft, passengers, and cargo has decreased very drastically, resulting in losses to airlines.

Keywords: *Aircraft, passenger, and cargo movement at Hasanuddin Airport*

1. INTRODUCTION

Airport, according to Law No. 1 of 2009, is an area on land and waters with specific boundaries that are used as a place for aircraft to land and take off, boarding and dropping passengers, loading and unloading goods, places for intra or inter-mode transportation, equipped with aviation safety and security facilities. Airports have a significant role in supporting the progress of the economic sector, education, and development of a region. In the current era of development, one of the modes of transportation that needs to be considered is air transportation. Where the role of the air sector in the transportation system is to make it easier to carry out activities between islands and areas that cannot be reached by other modes of transportation in a relatively shorter and more efficient time and have a high level of accuracy, this is because flight operations are required to follow the rules of International Aviation, or the International Civil Aviation Organization (ICAO) [1].

Along with the increasing needs of the community, it can be seen in the mobility of people's movements as users of air transportation services which experienced very rapid growth, from 2016 to 2019 and increase in the movement was felt, this was marked by the increase in air

transportation products in the form of aircraft, passenger and passenger movements. Goods from Hasanuddin International airport to other airports, but during the Corona Virus Disease 2019 (COVID-19) outbreak, all countries in the world experienced difficulties, including Indonesia. World Health Organization (WHO) declared the virus outbreak a pandemic that has spread globally so fast from time to time. One of the impacts of Covid-19 is that it results in a decrease in the movement of air transportation modes due to the government's policy of reducing the movement of air transportation modes. Makassar's Sultan Hasanuddin International Airport, one of those affected by the COVID-19 outbreak, has decreased, as can be seen in the air transportation sector at Makassar's Hasanuddin International Airport, which experienced a very rapid decline in the movement of aircraft, passengers, and goods.

The beginning of 2020 limited the movement of residents into or out of an area to prevent the spread of the increasingly widespread COVID-19 virus. Hence, the government implemented Community Activity Restrictions, and the Government also implemented Ministerial Regulation Number 25 of 2020 concerning Transportation Control During the Homecoming Period. Eid al-Fitr in 1441 H in the context of preventing the

spread of COVID -19 for the eastern part of Indonesia, especially Makassar so that the movement at the Sultan Hasanuddin international airport in Makassar has decreased and passengers are required to carry out the Polymerase Chain Reaction (PCR) test at a price that is relatively more expensive than the ticket price. Flights so that people cancel their departures unless things are very urgent.

1.1. Related Work

Examination of aircraft passengers during the COVID-19 pandemic at Kusuma Perdana Halim Airport [2]. The movement of air passengers and goods during the COVID-19 pandemic in Indonesia. The movement of commercial aircraft and passenger aircraft occurred at Banyuwangi Airport [3]. Analysis of the influence of commercial aircraft movements on passenger movements at the Adi Sumarmo International Airport Solo [4]. Analysis of the Effect of Service Quality on Railway Transportation Service Satisfaction [5]. The Effect of Balancing Aircraft Movements on Improving Soekarno-Hatta Airport Performance [6].

1.2. Our Contribution

They knew the number of movements of aircraft, baggage, passengers, and cargo at the airport before the covid-19 pandemic that hit the State of Indonesia, especially at the Sultan Hasanuddin International Airport, Makassar, so that the airport operator, namely PT (Persero) Angkasa Pura airlines and I operating can anticipate the company's operational losses due to Covid-19 which can result in a decrease in movement at the airport. What is the strategy to revive the movement of air transportation so that the economy in an area can grow by returning to the normal movement of aircraft, passengers, and goods.

1.3. Paper Structure

In analyzing the impact of COVID-19 on the movement of passengers and goods on air transportation in the South Sulawesi Region, precisely at the Sultan Hasanuddin International Airport in Makassar, the researchers used a library study (study literature) or commonly known as document study. Secondary data in the form of report data on aircraft, passenger, baggage, cargo, and post traffic reports from airport management sources, namely PT. Persero Angkasa Pura I, starting from 2016 to 2020 at Sultan Hasanuddin International Airport Makassar. The conclusion of this study is to find out the number of aircraft movements, baggage, passengers, and cargo, whether it has increased or decreased during the COVID-19 pandemic, and to provide input to airport operators and managers.

2. BACKGROUND

2.1. Descriptive Analysis

This analysis is used to describe or describe the data that has been collected as it is, without intending to make conclusions that apply to the public or generalizations. In this study, the descriptive analysis contains data on the movement of aircraft, baggage, passengers, and cargo both domestically and internationally that occurred at Sultan Hasanuddin International Airport Makassar in the 2016-2020 period. So technically, it can be seen that there is no error level because the researcher does not intend to generalise, so there is no generalization error.

2.2. Domestic movement of aircraft, baggage, passengers, and cargo

The number and presentation of aircraft movements, baggage, passengers, and Domestic cargo at Sultan Hasanuddin International Airport Makassar for the last five years, 2016, 2017, 2018, 2019, and 2020, can be seen in the table below:

Table 1. Movement of Passengers and Goods at Sultan Hasanuddin International Airport Makassar

Movement (%)	2016	2017	2018	2019	2020
Aircraft	20.3	23.0	23.9	19.6	13.2
Baggage	22.2	26.4	28.3	15.2	7.90
Passengers	20.2	23.0	25.4	19.9	11.5
Cargo	18.3	21.4	23.9	16.5	19.9

From the table data on Domestic aircraft movements, at the Sultan Hasanuddin International airport Makassar above, starting in 2016, it was 20.3%, in 2017 there was an increase of 23.0%, in 2018, there was an increase of 23.9%. However, at the end of 2019, there was a decrease in aircraft movement by 19.6%, and in 2020 by 13.2%, it decreased drastically due to covid-19 as well as the movement of baggage and passengers who experienced a decline and the existence of government regulations regarding restrictions on aircraft transportation movements. However, the movement of cargo at Sultan Hasanuddin International Airport Makassar in 2016 was 18.3%, in 2017 there was an increase in movement of 21.4%, in 2018 there was an increase compared to the previous two years of 23.9%.

However, in 2019 the movement of cargo goods experienced a drastic decline caused by government regulations regarding aircraft movement restrictions, which impacted the movement of cargo goods. However, in 2020 the movement of cargo goods increased compared to 2019 by 19.9% due to several airlines slowly starting to change their business strategy by only providing logistics services during commercial flight restrictions. In order to survive in times of crisis due to the COVID-19 pandemic, some airlines have been forced to take advantage of new aircraft and take advantage of

empty cabin space to transport cargo. If you convert new passenger planes into cargo planes, the cargo capacity can increase.

2.3. International movement of aircraft, baggage, passengers, and cargo

The number and presentation of international aircraft, baggage, passengers, and cargo movements at Sultan Hasanuddin International Airport Makassar for the last five years, 2016, 2017, 2018, 2019, and 2020, can be seen in the table below:

Table 2. Percentage of Passengers and Goods at Sultan Hasanuddin International Airport Makassar (%)

Movement (%)	2016	2017	2018	2019	2020
Aircraft	18.9	21.6	24.1	28.4	7.30
Baggage	15.9	23.8	23.6	29.5	7.20
Passengers	16.5	22.7	23.2	30.7	6.90
Cargo	23.4	20.3	16.6	22.8	16.9

From the table data on the international movement of aircraft, at the Sultan Hasanuddin International airport, Makassar above, starting in 2016 it was 18.9%, in 2017 there was an increase of 21.6%, in 2018 it was 24.1% an increase, in 2019 it was 28.4% higher than the previous year, and in 2020 as much as 7.3% was very downhill. In January 2020, when the first COVID-19 cases were identified in Wuhan, these positive cases continued to increase. Thus, in March 2020, the World Health Organization (WHO) issued a statement stating that COVID-19 is a global pandemic due to the increasing spread and severity. The implication of this statement is to encourage governments in various countries to limit the movement of their population to prevent the spread of the virus, which is getting more comprehensive so that the Indonesian government limits the movement of air transportation modes in and out of the country, which results in the movement of aircraft, baggage, passengers, and cargo going down.

2.4. Domestic and International aircraft, baggage, passenger, and cargo movements 2016-2020

The total number of domestic and international aircraft, baggage, passenger, and cargo movements at Sultan Hasanuddin International Airport Makassar for the last five years, 2016, 2017, 2018, 2019, and 2020, can be seen in the table below:

Table 3. Amount and Percentage of Passengers and Goods at Sultan Hasanuddin International Airport Makassar (2016-2017).

Movement (%)	2016	2017
Aircraft	100,633	113,915
Baggage	107,027,149	128,117,631
Passengers	10,756,915	12,294,226
Cargo	72,389,892	84,411,255

From the table data on the movement of aircraft, baggage, passengers, and cargo at the Sultan Hasanuddin International airport, Makassar, starting in 2016 it was 100,633, in 2017 there was an increase of 113,915, in 2018 there was another increase of 117.130, in 2019 there was a decrease in movement of 96,229 and 2020 there was another decline of 64,503 movements, as well as a very drastic decrease in the movement of baggage and passengers from 2016 to 2020 both domestically and internationally due to the Indonesian government making several policies in its efforts to reduce the transmission of the SARS virus. Cov-2 causes the COVID-19 pandemic outbreak by reducing transportation services by ratifying Government Regulation Number 21 of 2020 concerning Large-Scale Social Restrictions (PSBB). The government has also implemented Ministerial regulation Number 25 of 2020 concerning Transportation Control During the Eid Al-Fitr Homecoming Period of 1441 H in the Context of Preventing the Spread of COVID-19.

Table 4. Amount and Percentage of Passengers and Goods at Sultan Hasanuddin International Airport Makassar (2018-2020).

Movement (%)	2018	2019	2020
Aircraft	117,130	93,229	64,503
Baggage	132,766,101	71,357,575	36,896,132
Passengers	13,303,838	10,443,435	6,027,367
Cargo	93,136,835	64,406,912	77,500,843

The regulation contains a prohibition on the use of transportation (including air transportation) for domestic travel during the Large-Scale Social Restrictions (PSBB) period from/to the red zone, which was enforced on April 24 - May 31, 2020, and was extended to June 7, 2020, through the Decree of the Minister of Transportation Number 116/2020. The transportation control policy in the context of preventing the spread of COVID-19 by taking into account health protocols (before travel, during travel, and after travel) came into effect on April 9, 2020, through Ministerial regulation Number 18/2010.

Reducing airport capacity (slot time), limiting the number of passengers to a maximum of 50% of the total seating capacity by implementing physical distancing [7], and adjusting tariff limits are some of the policies listed in the regulation. However, the cargo movement in 2016 was 72,389,892; in 2017, there was an increase of 84,411,255; in 2018, it again increased by 93,136,835 movements; in 2019, it decreased due to restrictions on air transportation modes of 64,406,912. 2020 saw an increase in cargo movement compared to 2019 of 77,500,843 movements due to airlines slowly changing their business strategies by only providing logistics services during commercial flight restrictions to survive in times of crisis due to the COVID-19 pandemic and reduce airline operational costs. Some airlines are forced to use new aircraft and empty cabin space to transport

cargo. If you convert new passenger planes into cargo planes, the cargo capacity can increase as much as possible to avoid huge losses.

3. CONCLUSION

The conclusion from the evaluation of the movement of aircraft, passengers, and goods during the Covid-19 pandemic at Sultan Hasanuddin International Airport Makassar is that there has been a very rapid decline in movement at the airport, both in terms of domestic and international movements caused by the COVID-19 pandemic. that hit the State of Indonesia so that it had an impact on the movement of air transportation modes, because of government policies to limit air transportation modes so that the spread of COVID-19 in Indonesia did not increase or expand and the government's policy to conduct a Polymerase Chain Reaction (PCR) test for every prospective passenger. Before travelling by air transportation mode and implementing Community Activity Restrictions (PPKM) according to PM Regulation Number 25 of 2020 concerning Transportation Control during the pandemic.

ACKNOWLEDGMENT

This research was supported by Makassar State University (UNM), notably the Engineering Vocational Education Study Program, Makassar Aviation Polytechnic and PT (Persero) Angkasa Pura I, Sultan Hasanuddin Airport Makassar.

REFERENCES

- [1] P. C. Susanto and Y. Keke, "Implementasi Regulasi International Civil Aviation Organization (ICAO) pada Penerbangan Indonesia," *Aviasi J. Ilm. Kedirgant.*, vol. 16, no. 1, pp. 53–65, 2020.
- [2] D. D. Widyastuti, "Pemeriksaan Penumpang Pesawat Udara Pada Masa Pandemi Covid-19 Di Bandar Udara Halim Perdanakusuma," *J. Mitra Manaj.*, vol. 12, no. 1, pp. 53–60, 2021.
- [3] F. Sabur, "Pengaruh Pergerakan Pesawat Komersial Terhadap Pergerakan Penumpang di Bandara Blimbingsari Banyuwangi," *AIRMAN J. Tek. dan Keselam. Transp.*, vol. 2, no. 1, pp. 12–29, 2019.
- [4] Jaya, "Daftar pustaka," *Penginderaan Jauh Satelit untuk Kehutanan*. pp. 2003–2004, 2002.
- [5] Suluh, "Penumpang Di Bandara Internasional Adi Sumarmo (Bias) Solo," p. 73, 2003.
- [6] A. Mardoko, "Jurnal Perhubungan Udara," *Implement. Aerotrop. Interact. concept based Spat. Indones.*, vol. 41, no. 584, pp. 195–202, 2015.
- [7] V. M. Arora, M. Chivu, A. Schram, and D. Meltzer, "Implementing physical distancing in the hospital: A key strategy to prevent nosocomial transmission of COVID-19," *J. Hosp. Med.*, vol. 15, no. 5, pp. 290–291, 2020.