

# On Time Performance at I Gusti Ngurah Rai Airport during the Covid-19 Transitions

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**Abstract**— This research is an explorative study. The study explored the OTP (on-time performance) of I Gusti Ngurah Rai (IGNR) airport during the covid-19 pandemic outbreak. The pandemic has raised a question whether the OTP of an airport in this case IGNR airport became better (more punctual) or decreased (less on time) as an impact of the outbreak. This study aims to find the OTP of IGNR airport during the transitions of pre-covid and post-covid era by collecting information and comparing between the departure time schedule and the actual departures time of the flights. Data were collected using FlightRadar24 flight tracker applications. The flights included in the calculation are domestic flights only because international flights were closed during the Covid-19 era. The scope of flights within this study are scheduled domestic flights between 3 January 2020 and 3 March 2022 which is a month before and a month after the re-opening. The result of the study reveals that the OTP of the IGNR airport has been slightly better during the covid-19 era than before and after covid era. The contribution of this research finding is the better understanding of airport OTP during a pandemic outbreak; and therefore the tourism stakeholders can take proper measures in the anticipation to the airline flight schedule in the pandemic situation.

**Keywords;** on time performance, OTP, punctuality, Covid-19 era, Ngurah Rai Airport

## I. INTRODUCTION

Bali as a tourism destination really depends on the airport as a main gate of its tourists. I Gusti Ngurah Rai (IGNR) Airport yet is the only airport in the island. This airport as per 2019 handled 24.5 million passengers [1].

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Global outbreaks of the covid-19 pandemic disproportionately affect different industries and businesses, thereby determining their volatility and preparedness. The Covid-19 pandemic has brought many changes in all aspects of life. One of the most affected is tourism industries [2]. One component of tourism is transportation. Aviation as a mode of transportation has a very important meaning and role to support tourism activities in Bali. Therefore, the researcher applied I Gusti Ngurah Rai airport as the object of research.

OTP, stands for On-Time Performance, is a widely adopted and accepted method of measuring and understanding punctuality or timeliness for different modes of public transport. It is not just for aviation. It provides a common standard and easy means of comparing how well an airline service operator management according to its planned or published schedule compared to the actual departure or arrival.

In air transport, an airline departure or arrival is classified to be on time if it has a departure or arrival time occurs within 15 minutes of the published scheduled time. The schedule is the customer will use to demand the service quality. However inevitably, there are some external factors may disrupt such as adverse weather conditions, land traffic congestion, incidents, can cause delays for operators, however in common, flight OTP can be influenced by the performance of airlines it selves and airports as well. Thus airline On-Time Performance is widely used as a standard key performance indicator for airlines and airports.

Flight performance is something that plays a role in supporting the sustainability of the airline company because poor performance will result in customer switching. One of the

performances in the aviation industry is the on-time performance (OTP) [3]. There are 2 OTPs, one which concerns to the airlines and one which concerns to the airport [4]. And the OTP of airport is the punctuality or timeliness of the departure of a flight. In aviation industry, a flight is considered on time when it arrives/departs within 15 minutes of the scheduled time [3] [4]. This concept is adopted by most of the dominant aviation stakeholders such as ICAO (International Civil Aviation Organization), OAG (Official Airline Guide), SITA (Société Internationale de Télécommunications Aéronautiques), FAA (Federal Aviation Administration) and also Indonesian Ministry of Transport and Directorate General of Civil Aviation (DGCA).

The purpose of the research is to figure out how is the OTP of IGNR airport during the transitions of pre-covid and post-covid era. The study is conducted by collecting information and comparing between the departure schedule and the actual departures of flights. This research aims to be able to provide information or knowledge of the pandemic effect to the OTP of an airports [4]. The information that can be used as considerations to determine policies when a pandemic or other disaster occurs. Also, the OTP can be used as a benchmark in increasing low performance airport [5].

The international flights re-opened on the 3 February 2022 after being closed during the covid-19 pandemic [6] [7]. Therefore, the flights included in this study are the domestic flights which are scheduled between the 3 January 2022 and 3 March 2022 which were a month before and a month after the re-opening of international flights. The research by Y.S. Rizki et al in revealed that the average OTP of IGNR airport is 75.15% and the Moneter magazine in 2019 revealed that the OTP is 76.5% [8].

## II. RESEARCH METHOD

This research is explorative study. The step towards the research objectives begins with several searches or research related to the of the parameters needed to be involved in the performance [9], available applications [10], and standards that will be used in this research. This step was conducted to find the standard values that apply in the air transportation industry related to OTP and the parameters. The research specially to find out the most suitable flight tracker application [11] which has the more available features and user friendliness [12]. Some applications may have more features but may not available or may not needed for this research. The study found that the most suitable is FlightRadar24 which is a web-based flight tracker application.

Flights schedule and the actual flights departure then collected by using the FlightRadar24 application. If there are international flights exists then those international flights were excluded manually, because there were some international flights in the schedule but they are usually chartered or cargo flights and not scheduled commercial flights.

Each of actual departure time through IGNR airport was compared with the timed schedule. If the difference time between the schedule and the actual departure is more than 15 minutes then it is classified as late then it was marked. The OTP is equal with the number of late flights divide by all

flights in percentage. The 15 minutes tolerance are widely used by most of large aviation organization in the world as a standard to determine whether a flight is classified as on time or late. This standard is also applied by the Federal Aviation Administration (FAA) on its official web page on the operational metrics [13].

By comparing the selected domestic flight existing schedule with the actual departure time then the OTP was calculated by determining the percentage of flights that classified as on time [14]. Results then was discussed to obtain information needed to draw conclusion and suggestions. The needs to increasing OTP are very important to keep the customer loyal and to keep the tourism industry's image better [15].

The factors might influence OTP which not include in this study are: 1) within the airlines its selves like the preparedness of the staffs after some laid offs, 2) some weather constraints, 3) fueling, 4) airplane technical problems, 5) lack of airline staffs, and 6) transit exchange.

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## III. RESULTS & DISCUSSION

The results of the study revealed that the OTP of IGNR airport during the covid-19 measure is above or better (79.88%) than the OTP after the opening of international flights (76.56%). Interestingly the OTP after covid-19 measure is nearly as in the year 2014 which is 76.5 [8]. This applies specifically to time schedules, the more punctual the schedule applied the better the predicate of institution who use schedules in its activities.

The impact of covid-19 to other than transportation industries especially in the performance index is mostly declined. For example in hotels, manufacturing, medical etc. The report released by Organization for Economics Cooperation and Development (OECD) in September 2020 indicates that even though global GDP is projected to decline by 4.5% in the year 2020 before picking up again by 5% in 2021. The unemployment is also projected to rise to 9.4% in Q4 2020 from 5.4% in 2019 [20].

The study reveals that the OTP became slightly better during the covid-19 measurement. Covid-19 measure in this case is the closure of international flight which then opened again at the 3 February 2022. This in-line with the research conducted by Yimga [16], which also found that even in the covid-19 era the performance of aviation in the form of OTP was increased or better. It is mentioned on the AllThingsOnTimePerformance by Inform GmbH [17] which cited data from OAG [18]. Covid-19 has made all levels governments perform in a radical uncertainty. The regional and local impact of the Covid-19 crisis is heterogeneous high, with significant impacts for crisis management and response policy. The territorial impact of the Covid-19 crisis is in many different dimensions: health, economic, social and fiscal [19].

In the health industries pandemic had already caused massive relocation among small and medium businesses. There are reductions in demand of employee of health which concerns as the reasons for closure of some businesses [20].

Even the performance of some land transport businesses was hit devastatingly by the pandemic. "Our World in Data" [16] (WD) reported that some public transports are closed during the Covid-19 pandemic [21]. The report is based on the source from the Oxford Covid-19 Government Response Tracker, Blavatnik School of Government, University of Oxford.

The OTP of some airports and airlines is contrary with the online industries, while most of the industries performances got negative effect by covid-19 pandemic even closed the business, the increment of OTP during covid-19 era is different, and quite strange for some people. This phenomenon did not happen on other mode of transportation industries. The impacts of Covid-19 is different with any of us have ever experienced. Large scale crises, like natural disasters, they share many common characteristics, however this pandemic has very different characteristics. It absolutely impacts everyone. Unlike hurricanes, flood or earthquakes, there is no geography boundary or topography limitation that is immune. Unlike famine, there is none certain society or economic class that is protected from its reach. However the impacts and aftermaths can be very different.

Even in the US, the covid-19 pandemic affected on flight delays in the U.S. airline industry. Yimga using correlation data on covid-19 cases and flight on-time performance, found that increases in reported covid-19 cases are associated with decrease in the departure and arrival delays. Especially, a standard deviation increase in the covid-19 cases on average reduces arrival delay by 1 minute 42 second and departure delay by 2 minutes. The results shown that despite the economic downturn caused by the pandemic, a strange sign emerges where flights are more on time departed and arrived amid the pandemic.

The increment of OTP in the aviation industry involving many factors. The less passengers should be handled by the staffs are clearly as a factor that contribute the speed of passenger handling thus increased the OTP. Crowd of passengers at the airport easily cause a delay even cancellation of a flight. The traffic from city to airport were faster than usual during covid, this leads to the increment of OTP as well. No crowd queuing on the gate and on the airplane door anymore because some flights only served 50% of its passenger. Overall, less client has made every step became smoother. There are some other factors that might influenced the OTP positively or negatively during covid-19 era which the author did not include as a consideration, such as: 1) less staffs some staffs after laid offs, 2) weather constraints, 3) fueling time, 4) airplane technical problems, 5) the overloaded of airline staffs and 6) transit exchange. Transit exchange or connecting flight is one of the possible contributions to the increment of OTP because less complexity and less exchanges of the crowd when transferring connecting passengers. If the airport was expanded as the tourism minister said, the airport management should anticipate the possibility that the OTP will decrease again.

Bear in mind that the airport OTP is also fragile from the performance of airlines which operating in the airport. A bad performance of an airline operator in an airport will contribute instantly the OTP of the airport. OAG mentioned that OTP

may be influenced by aircraft type [4]. A narrow but long aircraft is known a slow aircraft by this means.

In other way around after the covid era which the milestone was when the international flights open does not mean that the performance going better automatically. In some parts of the world it is even creating service failures and bankruptcy threats. This phenomenon was reported by International Labor Organization (ILO) on 06 December 2021 [22]. Soon after there were some signs of recovery from the Covid-19 pandemic, the global supply chains are being in risk again by an unprecedented new crisis. As the backbone of global supply chains, land transport operators are even calling on their governments for support. This is inline with the result of this study that after the Covid there are some new crises emerged. This contributes to the decline of performance of some services such as airport OTP and airline OTP. Dramatic increases in demand, ongoing Covid-19 restrictions, staffs or pilot shortages and drastic fuel price increases as the aftermath of Ukraine war have created a "perfect storm" that bouncing back further aggravate supply chain disruptions after Covid era. Other than in punctuality, most of the transport affected by coronavirus [23].

By the way the increment of OTP does not automatically mean that the profit of the company become better. Half capacity of passengers means that the income of the accompany is also only a half part. If this condition happens during a longer time, it is soon will make a company fail or stop operating. This happened to many hotel industries in Bali.

The Covid-19 pandemic as a kind of global disaster does not necessarily make OTP as one of key performance indicators (KPI) to become worsen. It is very different with other KPI's in many different job, companies or activities. For this reason, any tourism activities involving airplane passengers should not be worry on the OTP or scheduling of their clients or their guests. It does need some kind of over anticipation or reaction to face this situation. This will help the working atmosphere to become in less pressure. However, the industries should always keep stay alert to the other kind of disaster which devastate infrastructures, chaos, political turmoil etc.

The increase of the punctuality of schedules or in this case is an airport OTP during the Covid-19 era is also analyzed by Yimga [16], Iyer [25] also it is declared by "All things OTP" [20] and the US government Bureau of Transportation Statistics where it says that the OTP hits high during Covid-19 era [26].

The better understanding of OTP in the pandemic situation may contribute to the tourism industries to have proper anticipation and avoiding over anticipation in handling their guests especially airline passengers concerning flight schedules.

#### IV. CONCLUSION

Concerning with Covid-19 era, the OTP of IGNR can be divided into three period which are 1) pre-covid, 2) during covid, and 3) post-covid era. The milestone is the closure and the opening of the international flight.

The OTP of I Gusti Ngurah Rai Airport became better or more punctual during covid-19 era than after the closure was released. In other short words the OTP of I Gusti Ngurah Rai Airport became better during covid-19 era compared with post covid-19 era.

The contribution of this research finding is better understanding of OTP during a pandemic outbreak; therefore the tourism stakeholders can take proper measures in the anticipation airline flight schedule.

The better OTP does not mean the better income for the company because they are only allowed to sell half of their capacity. OTP will become a future service quality measurements tool in the normal era, however it won't in the covid outbreaks era.

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