

Comparison Analysis of Airline On-Time Performance Between Husein Sastranegara Airport and Kertajati International Airport Using Flightradar24

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Article Info	ABSTRACT
<p>Article History: Submitted: 30 Agustus 2024 Revised : Accepted :</p>	<p>This study evaluates the impact of the operational transfer from Husein Sastranegara Airport to Kertajati International Airport, focusing on the analysis of airline On-Time Performance (OTP). Data were collected using the Flightradar24 application to monitor daily flight arrival and departure schedules for one month before (October 2023) and after (April 2024) the transfer, as well as secondary data from Angkasa Pura II regarding the causes of delays. The analysis revealed that although the number of flights decreased by 5.20%, the on-time performance improved by 8.81%, and flight delays were reduced by 38.56%. However, flight cancellations increased, indicating challenges in operational adjustments at the new airport. Contributing factors to the delays included military aircraft movements, weather conditions, and operational transitions following the relocation. These findings provide valuable insights into the post-relocation operational dynamics and their implications for flight service efficiency. This study is expected to serve as a reference for stakeholders in formulating strategies to enhance operational performance and mitigate risks at the new airport.</p>
<p>Keywords: Cancellation, Delay, Flightradar24, On-Time Performance (OTP), Transfer.</p>	

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INTRODUCTION

Air transportation has become an essential element of human mobility and goods delivery, in line with economic growth and the increasing need for global connectivity. Airports, as vital infrastructure within the air transportation system, play a crucial role in ensuring travel comfort and efficiency by providing reliable and punctual flight services [1]. The operational relocation from Husein Sastranegara Airport to Kertajati International Airport is a strategic move aimed at enhancing capacity, efficiency, and service quality for air transportation in West Java. With its greater capacity, Kertajati International Airport is expected to accommodate the growing air traffic that Husein Sastranegara Airport can no longer manage [2].

This decision not only impacts the physical transformation of the aviation industry but also affects the performance of airlines, particularly in terms of On-Time Performance (OTP) and passenger experience. OTP, as a key performance indicator, is strongly influenced by safety and punctuality, which are the primary focus areas in the air transport service industry. This study utilizes data from Flightradar24 [3] to conduct an in-depth comparative analysis of airline OTP performance at both airports, aiming to identify differences in the airlines' ability to maintain flight schedules.

By analyzing and comparing OTP at both airports, this study offers valuable insights for decision-makers in the aviation industry and airport authorities. It demonstrates that airport operational relocation impacts not only operational efficiency but also passenger trust in airlines. A deeper understanding of this effect can support the improvement of air transport services and provide better direction for future infrastructure development.

On-Time Performance (OTP) in Air Transportation

On-Time Performance (OTP) is a key indicator for evaluating the success of transportation services [4], particularly in the aviation sector. OTP measures the punctuality of aircraft arrivals and departures according to the scheduled timetable. In the international aviation industry, the standard OTP benchmark is set at 85%, indicating that airlines achieving this threshold are considered to meet good service quality standards.

High OTP levels have significant impacts, such as improving passenger experience by minimizing inconvenience due to delays or cancellations. Additionally, strong OTP performance enhances airline reputation and reduces additional costs caused by schedule uncertainty. Therefore, achieving and maintaining a high OTP is essential for airlines in delivering quality and satisfying services to passengers.

OTP Metrics and Evaluation Standards

To objectively measure and compare the punctuality of airline services, a set of standardized metrics is utilized. These metrics are critical for evaluating the overall performance of airline operations at a specific airport. The primary indicators used to assess OTP include:

$$\text{On-Time Percentage} = (\text{Number of On-Time Flights} / \text{Total Scheduled Flights}) \times 100\% \quad (1)$$

$$\text{Delay Percentage} = (\text{Number of Delayed Flights} / \text{Total Scheduled Flights}) \times 100\% \quad (2)$$

$$\text{Cancellation Percentage} = (\text{Number of Cancelled Flights} / \text{Total Scheduled Flights}) \times 100\% \quad (3)$$

$$\text{Average Delay Duration} = (\text{Total Delay Minutes} / \text{Number of Delayed Departures}) \quad (4)$$

These calculations offer a comprehensive understanding of airline service quality and punctuality. The higher the on-time percentage and the lower the delay and cancellation rates, the better the performance of the airline is considered to be. Airlines and airport authorities can utilize these metrics for continuous monitoring, identifying operational inefficiencies, and developing strategies to improve scheduling and resource allocation.

Furthermore, industry benchmarks, such as the 85% OTP standard set by international aviation bodies, provide a reference for evaluating whether airlines are delivering satisfactory service levels [4], [5]. These indicators are often published in airport performance reports and used for public transparency, regulatory oversight, and competitive benchmarking among carriers.

Delay

Flight delays are categorized into four main causes: airline management issues, technical or operational problems, weather conditions, and external factors such as military activity or airspace restrictions [6].

Airlines

Airlines are commercial or state-owned entities providing scheduled or non-scheduled air transport services. Their performance is evaluated based on punctuality, safety, and service quality [4].

On-Time Performance of Airlines in Indonesia

OTP is a critical benchmark for airline reliability in Indonesia. High OTP not only boosts customer trust but also reflects operational efficiency and competitiveness among domestic carriers [4], [6].

METHODS

This study employs a quantitative comparative method to analyze changes in airline On-Time Performance (OTP) before and after the relocation of commercial flight operations from Husein Sastranegara Airport to Kertajati International Airport. The methodology outlines the data collection sources, scope of observation, calculation formulas used, and analysis techniques applied to evaluate departure and arrival punctuality among selected domestic airlines.

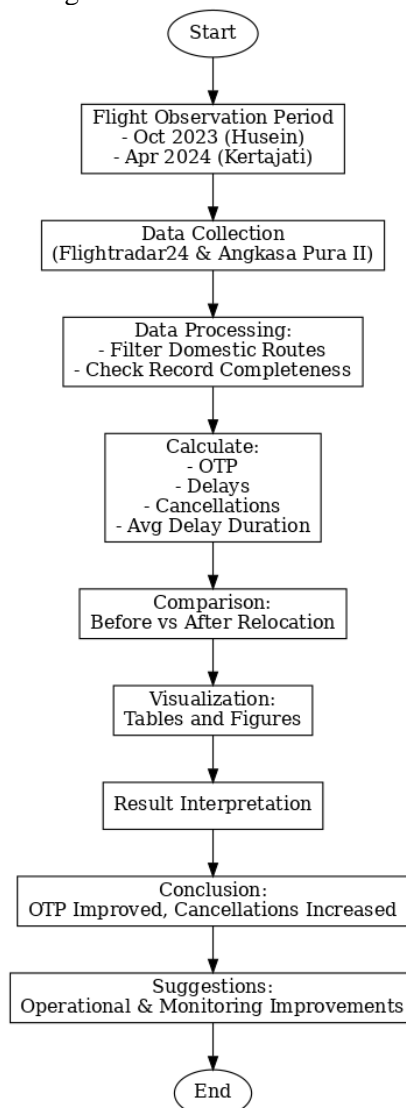


Figure 1. Flowchart

RESULT AND DISCUSSION

This section presents the findings of the study based on the analysis of flight data collected from Flightradar24 and secondary sources. The results focus on the comparison of On-Time Performance (OTP), delay percentages, cancellation rates, and average delay durations of airlines operating at Husein Sastranegara Airport and Kertajati International Airport. Tables and graphs are used to illustrate differences in airline performance before and after the operational transfer, providing insights into the impact of airport relocation on service punctuality and reliability.

Departure On-Time Performance (OTP) Analysis

To determine and calculate the On-Time Performance (OTP) of airlines operating at Kertajati International Airport and Husein Sastranegara Airport, daily scheduled flight data and actual departure records are required. Kertajati International Airport currently serves only four routes for Super Air Jet, namely to Denpasar, Medan, Balikpapan, and Kuala Lumpur. As mentioned earlier in this study, the analysis is limited to domestic airlines operating the same routes before the transfer from Husein Sastranegara Airport and after the transfer to Kertajati Airport, specifically Super Air Jet, Citilink, and Air Asia.

Departure OTP Analysis at Kertajati International Airport

As shown in Table 1 and Table 2, Air Asia had the best performance with a 94.12% OTP, no delays, and only one cancellation. Citilink recorded a lower OTP of 51.22% with 20 delays totaling 1,008 minutes. Super Air Jet had a moderate OTP of 56.19%, but a higher delay rate (33.33%) and 10.48% cancellations.

In Figure 2, Air Asia shows the most stable performance, while Citilink and Super Air Jet display larger portions of delay and cancellation. Figure 3 shows Super Air Jet with the longest average delay (66.37 minutes), followed by Citilink (50.4 minutes), while Air Asia had no delay at all.

Overall, Air Asia was the most reliable airline at Kertajati, while the other two experienced significant operational delays.

Table 1. Recapitulation of Departures at Kertajati International Airport

Airline	Scheduled flights	Number of On-Time Flights	Number of Delayed Flights	Total Delay Duration (Minutes)	Number of Canceled Flights
Citilink	47	21	20	1008	0
Air Asia	17	16	0	0	1

Table 2. Airline Departure OTP Percentages at Kertajati International Airport

Citilink			Super Air Jet			Air Asia		
OTP	Delay	Cancel	OTP	Delay	Cancel	OTP	Delay	Cancel
51,22%	48,78%	0%	56,19%	33,33%	10,48%	94,12%	0%	5.88%

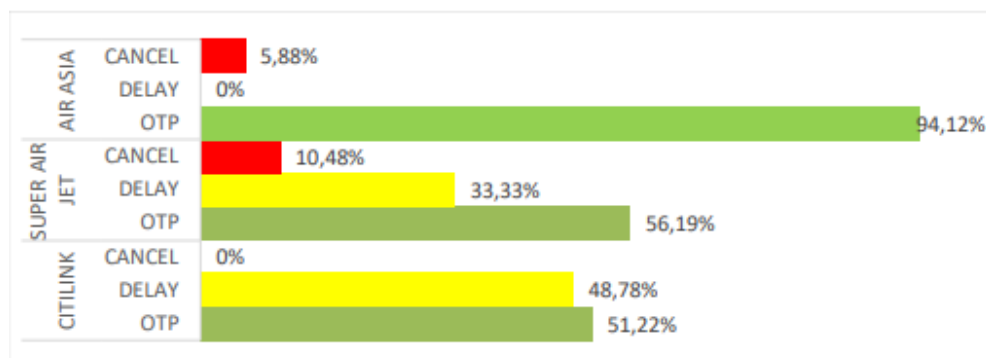


Figure 2. Comparison Chart of Airline Departure OTP Levels at Kertajati International Airport

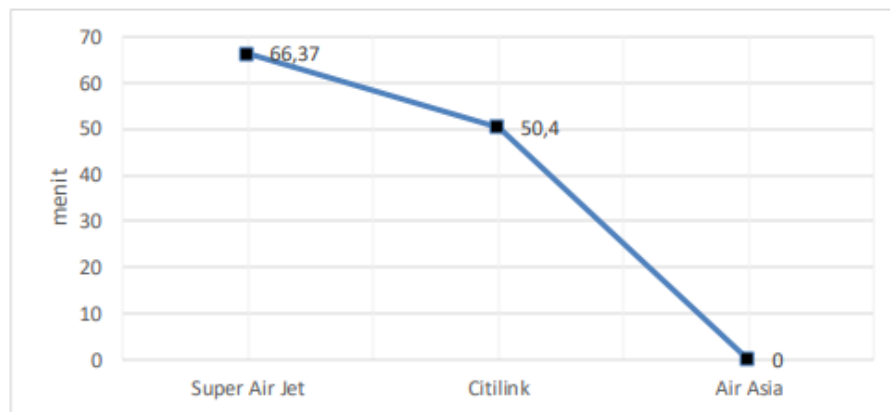


Figure 3. Comparison Chart of Departure Delay Durations of Airlines at Kertajati International Airport

Departure OTP Analysis at Husein Sastranegara Airport

As shown in Table 3 and Table 4, all airlines experienced lower OTP performance at Husein Sastranegara compared to Kertajati. Citilink’s OTP dropped to 43.75%, with 56.25% delays and 1,129 minutes of total delay. Air Asia, previously leading at Kertajati, dropped to 39.13% OTP with 60.87% delayed flights. Super Air Jet showed an OTP of 46.15%, with no cancellations.

Figure 4 illustrates these drops in OTP visually, with larger delay portions for all airlines. Figure 5 shows that Super Air Jet had the longest average delay (49.71 minutes), followed by Citilink (41.81 minutes) and Air Asia (43.28 minutes), indicating relatively consistent delay durations across airlines.

Table 3. Recapitulation of Departures at Husein Sastranegara International Airport

Airline	Scheduled flights	Number of On-Time Flights	Number of Delayed Flights	Total Delay Duration (Minutes)	Number of Canceled Flights
Citilink	48	21	27	1129	0
Air Asia	23	9	14	606	0

Table 4. Airline Departure OTP Percentages at Husein Sastranegara International Airport

OTP	Citilink			Super Air Jet			Air Asia		
	Delay	Cancel	OTP	Delay	Cancel	OTP	Delay	Cancel	
	56,25%	0%	46,15%	53,85%	0%	39,13%	60,87%	0%	

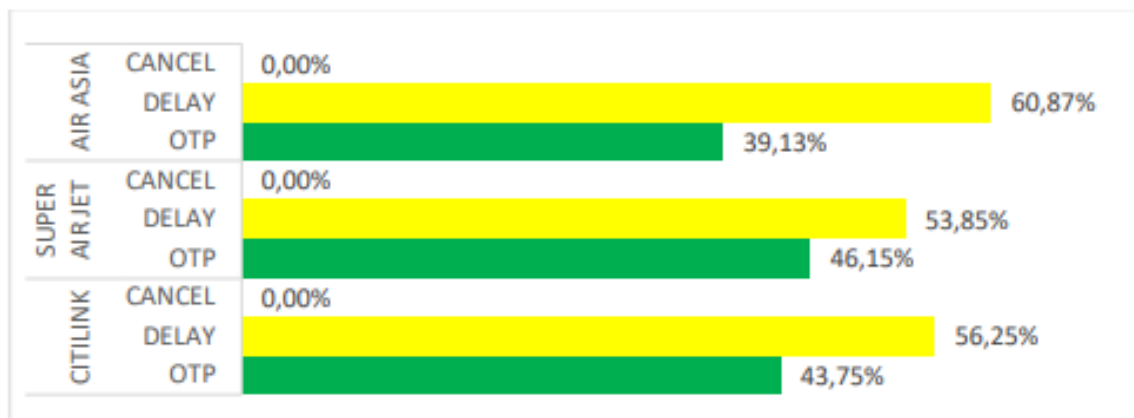


Figure 4. Comparison Chart of Airline Departure OTP Levels at Husein Sastranegara International Airport

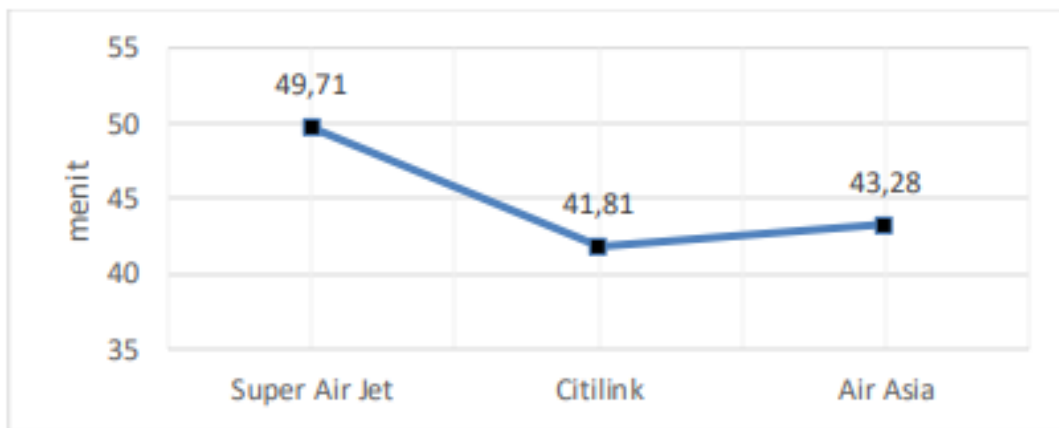


Figure 5. Comparison Chart of Departure Delay Durations of Airlines at Husein Sastranegara International Airport

Arrival On-Time Performance (OTP) Analysis

To determine and calculate the On-Time Performance (OTP) of airline arrivals at Kertajati International Airport and Husein Sastranegara Airport, daily scheduled arrival times and actual arrival data were required. As with the departure analysis, Kertajati International Airport only serves four routes for Super Air Jet, namely to and from Denpasar, Medan, Balikpapan, and Kuala Lumpur. This study focuses exclusively on domestic airlines that operated identical routes before the transfer from Husein Sastranegara Airport and after the move to Kertajati, specifically Super Air Jet, Citilink, and Air Asia.

Arrival OTP Analysis at Kertajati International Airport

Based on Table 5 and Table 6, Air Asia achieved the best arrival performance with a 94.12% OTP, no delays, and one cancellation. Citilink followed with a 73.17% OTP and 26.83% delay rate, while Super Air Jet had the lowest OTP at 56.55% and the highest cancellation rate (10.28%).

As seen in Figure 6, Air Asia shows the strongest performance, with no delay and minimal cancellation. In Figure 7, Super Air Jet had the longest average delay at 77 minutes, followed by Citilink (48.91 minutes), and Air Asia again showed zero delay.

These results confirm that Air Asia maintained excellent punctuality and efficiency at Kertajati compared to the other two airlines.

Table 5. Recapitulation of Arrival at Kertajati International Airport

Airline	Scheduled flights	Number of On-Time Flights	Number of Delayed Flights	Total Delay Duration (Minutes)	Number of Canceled Flights
Citilink	41	30	11	538	0
Air Asia	17	16	0	0	1

Table 6. Airline Arrival OTP Percentages at Kertajati International Airport

OTP	Citilink			Super Air Jet			Air Asia		
	OTP	Delay	Cancel	OTP	Delay	Cancel	OTP	Delay	Cancel
73,17%	26,83%	0%	63,55%	26,17%	10,28%	94,12%	0%	5,88%	

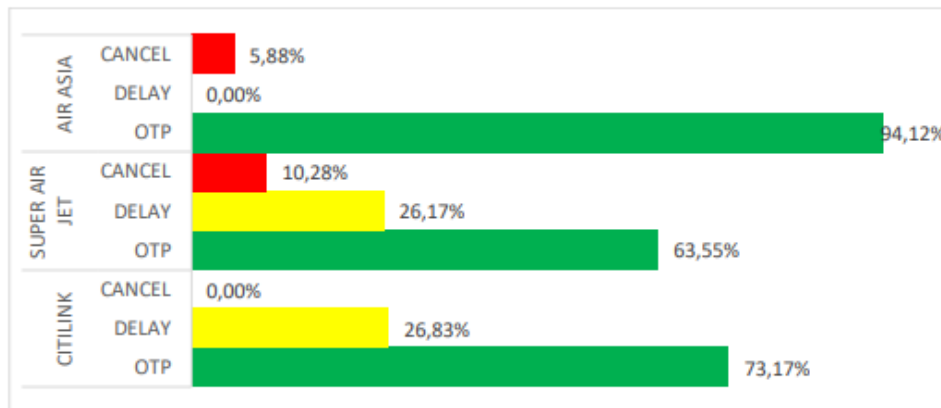


Figure 6. Comparison Chart of Airline Arrival OTP Levels at Kertajati International Airport

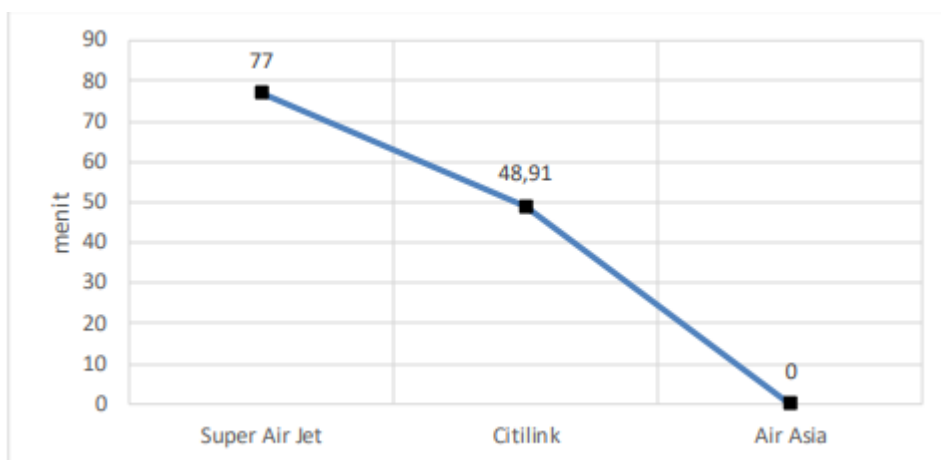


Figure 7. Comparison Chart of Arrival Delay Durations of Airlines at Kertajati International Airport

Arrival OTP Analysis at Husein Sastranegara Airport

According to Table 7 and Table 8, Citilink and Super Air Jet had similar OTP performances of 70.21% and 71.15%, with moderate delays and no cancellations. In contrast, Air Asia experienced a significant drop in OTP to 40.00%, with 60.00% of its flights delayed.

As shown in Figure 8, delay portions were higher for Air Asia, while Citilink and Super Air Jet maintained more balanced performance. Figure 9 shows that Citilink had the longest average delay at 62.35 minutes, followed by Super Air Jet at 46.76 minutes, and Air Asia with the shortest delay of 32.58 minutes despite its lower OTP.

In summary, although delays were common, Citilink and Super Air Jet maintained better punctuality than Air Asia at Husein Sastranegara.

Table 7. Recapitulation of Arrival at Husein Sastranegara Airport

Airline	Scheduled flights	Number of On-Time Flights	Number of Delayed Flights	Total Delay Duration (Minutes)	Number of Canceled Flights
Citilink	47	33	14	873	0
Air Asia	20	8	12	391	0

Table 8. Airline Arrival OTP Percentages at Husein Sastranegara International Airport

Citilink			Super Air Jet			Air Asia		
OTP	Delay	Cancel	OTP	Delay	Cancel	OTP	Delay	Cancel
70,21%	29,79%	0%	71,15%	28,85%	0%	40,00%	60,00%	0%

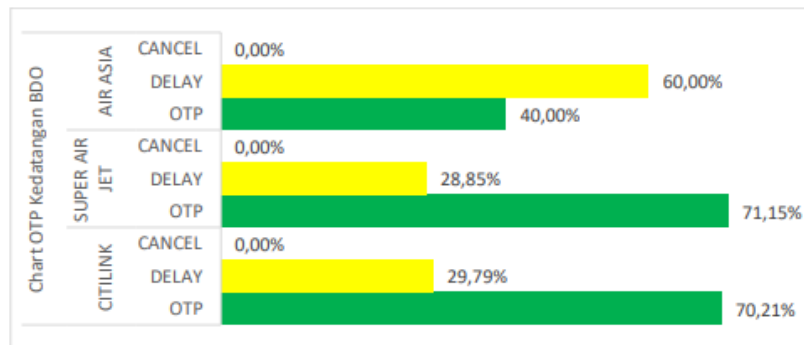


Figure 8. Comparison Chart of Airline Arrival OTP Levels at Husein Sastranegara International Airport

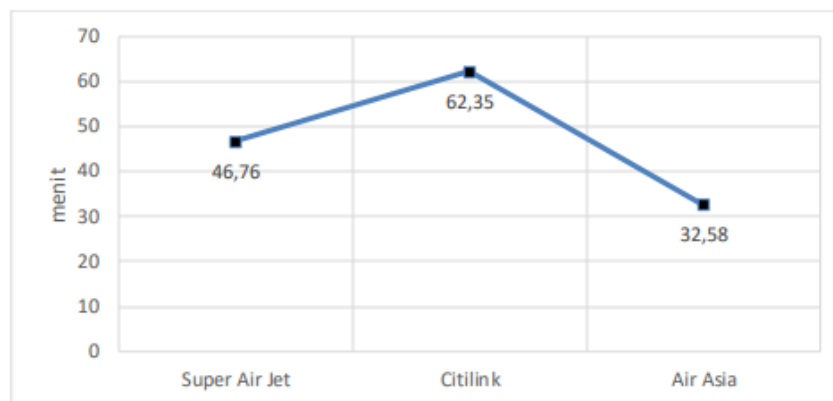


Figure 9. Comparison Chart of Arrival Delay Durations of Airlines at Husein Sastranegara International Airport

CONCLUSION

Based on the comparative analysis of airline On-Time Performance (OTP) before and after the airport relocation, several key conclusions can be drawn. The total number of observed flights decreased by 5.20%, from 346 flights at Husein Sastranegara Airport to 328 flights at Kertajati International Airport. However, the number of on-time flights increased by 8.81%, and the overall OTP improved by 8.24%, rising from 55.78% to 64.02%. Delayed flights dropped significantly by 38.56%, and the delay rate declined from 44.22% to 28.66%. On the other hand, flight cancellations, which previously did not occur, increased to 24 flights, resulting in a 7.32% cancellation rate.

Overall, Air Asia consistently achieved the highest OTP at Kertajati, while Citilink and Super Air Jet showed moderate performance with longer average delays. The transition to Kertajati positively impacted airline punctuality, though operational adjustments are still needed to address the rise in cancellations.

SUGGESTIONS

While the relocation to Kertajati improved OTP, the rise in cancellations highlights areas needing attention. To address this:

1. Airlines should improve turnaround time and delay management, especially Citilink and Super Air Jet.
2. Airport authorities should investigate the causes of cancellations and enhance operational support.
3. Future research should include longer timeframes and consider passenger satisfaction.

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REFERENCES

- [1]. ICAO, *Aerodromes: Annex 14 to the Convention on International Civil Aviation, Volume I – Aerodrome Design and Operations*, 4th ed., International Civil Aviation Organization, 2004.
- [2]. YAC. and S. H. Sanjaya, “Flights from Husein Sastranegara Officially Moved to Kertajati: Reasons, Airlines, and Routes,” *Kompas.com*, Oct. 30, 2023. [Online]. Available: <https://www.kompas.com/tren/read/2023/10/30/131500065/penerbangan-dari-husein-sastranegara-resmi-pindah-ke-kertajati-ini-alasan>. [Accessed: Dec. 22, 2023].
- [3]. Flightradar24, “About Flightradar24 – What We Do,” 2021. [Online]. Available: <https://www.flightradar24.com/about>. [Accessed: Mar. 31, 2024].
- [4]. L. S. Moonlight, L. Rochmawati, S. Suhanto, and M. Rifai, “Flight On-Time Performance (OTP) Information System at Juanda International Airport, Surabaya,” *Warta Penelitian Perhubungan*, vol. 34, no. 2, pp. 93–104, 2022.
- [5]. B. Wicaksono, “Evaluation of On-Time Performance of Scheduled Airlines at Sultan Syarif Kasim II Airport, Pekanbaru,” Undergraduate Thesis, Faculty of Engineering, Universitas Islam Riau, 2019.
- [6]. Ministry of Transportation of the Republic of Indonesia, *Delay Management for Scheduled Commercial Air Transport Operators in Indonesia*, Regulation No. PM 89, 2015.