ANALYSIS OF THE APPLICATION OF ONLINE TICKET BOOKING APPLICATION ACCESS BY KAI

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Abstract

This study aims to analyze the impact of the implementation of online ticket booking applications on the number of train passengers based on ticket sales data. The development of technology has brought significant changes in the transportation industry, including trains, with the introduction of online ticket booking applications. The analysis method used is a non-parametric statistical test to measure the relationship between the application and the number of passengers. Train ticket sales data for several years before and after the implementation of the application were used in the analysis. The results of the analysis showed a positive relationship between the implementation of online ticket booking applications and an increase in the number of train passengers. The findings support the view that the ease of access and convenience in booking tickets through the app has encouraged more people to use rail services. Although the results of this study indicate the positive impact of implementing online ticket booking applications, there are several other factors that can affect the number of passengers, such as economic factors, promotions, and additional services offered by train operators. Therefore, this study has limitations in considering all these factors. Based on these findings, it is recommended that train operators continue to develop and improve online ticket booking applications as part of their marketing and customer service strategies. This research contributes to understanding how technology can shape consumer behavior in the transportation industry and the extent of its impact on train passenger numbers

Keywords: Digitalization, Acces By KAI, Train, Ticket

Introduction

In the ever-evolving digital era, technological transformation has had a significant impact on various sectors, including the transportation industry. In the face of changing modern mobility paradigms and increasing customer expectations for integrated services, the rail industry needs to adopt innovative solutions to meet these challenges. Management Information Systems (MIS) and digital ticketing systems are emerging as potential solutions to improve operational efficiency and customer experience (Rama Aulia, 2017).

In 2022, train ticket purchases reached a significant number through various available purchase channels. Ticket sales data in that year showed that the Acces By KAI application was the top choice with a percentage of 48.9% of total ticket sales.

Table 1. Percentage of Train Ticket Purchases for Lebaran Transportation in 2022

No	Ticket Purchase Channel	Number of Transaction	Percentage of Total Ticket Sales
1	Access By KAI Application	855.322	48,9 %
2	External Channel	662.191	37,9 %
3	Counter	164.268	9,4 %
4	KAI Website	60.296	3,5 %
5	Contact Center	2.391	0,1 %
6	Vending Machine	1.216	0,1 %

Source: PT KAI press release (PT KAI, 2022)

Not only that, in the aspect of ticket sales channels, KAI noted that ticket sales transactions for long-distance and local trips during the Nataru 2022/2023 transportation period were mostly carried out through the Acces By KAI Application, which was around 58%, and through external channels with a percentage of around 29%.

Table 2. Percentage of Train Ticket Purchases for Nataru in 2023

No	Ticket Purchase Channel	Number of Transaction	Percentage of Total Ticket Sales
1	Access By KAI Application	2.547.177	57,79 %
2	External Channel	1.278.1100	29,02 %
3	Counter	581.000	13,19 %

Source: PT KAI press release (PT KAI, 2023)

The application of technology in the form of online ticket booking applications has changed the way people interact with transportation services, including trains. This technology brings changes in the way

passengers book tickets and access travel information (Luwihono et al., 2020). As online ticket booking apps grow in popularity, transportation companies, including train operators, have turned to take advantage of this new possibility. These apps offer convenience to customers by allowing them to book tickets without having to face physical queues or time constraints. However, while these benefits are real, the question of how these apps factually affect train ridership still needs to be further researched.

Therefore, this study will take a closer look at the impact of implementing an online ticket booking app on the number of train passengers. Through the analysis of ticket sales data before and after the implementation of the app, we can find out whether the change in the way passengers book tickets actually has an impact on the growth of passenger numbers. With a better understanding of this relationship, the transportation industry can take better strategic measures to meet the changing needs and preferences of consumers in this increasingly connected world.

The purpose of this study is to identify and analyze the effect of the implementation of online ticket booking applications on the number of train passengers in Indonesia. This study will explore data on train ticket sales over a certain period before and after the introduction of online ticket booking applications, in this case the researcher took a sample, namely the Acces By KAI application. The researcher chose the Acces By KAI Application as the research boundary because the data shows a significant increase in the number of transactions and the stability of customer preferences towards this channel. Thus, it is expected to reveal whether the adoption of this technology has an impact on increasing the number of passengers using train services.

Literature Review

Previous research that the author presents in Table 3. has produced a number of valuable findings related to the implementation of online ticket booking systems and their impact on customer satisfaction in rail services. Various researchers have explored these aspects using a variety of research methods.

Table 3. Literature Review Results Regarding the Implementation of Online Ticket Booking Systems and Their Impact on Customers in Railway Services

No	Related research	Objectives & Key Findings	Research methods
1	(Sheila Maria Belgis Putri Affiza, 2022)	This study found that the online ticket booking system and service quality have a positive and significant effect on customer satisfaction with train services.	Quantitative
2	(Syafi-in et al., 2019)	Another study found that there are differences in customer satisfaction between online and offline ticket booking at PT KAI, where online ticket booking has a higher level of satisfaction.	Descriptive, Comparative
3	(Davrin & Hidayat, 2021)	Research on the impact of online ticket booking services on customer satisfaction found that the quality of online ticket booking services has a positive effect on PT KAI customer satisfaction.	Quantitative
4	(Purba, 2019)	An app-based study found that the Acces By KAI app has made it easier for customers to book train tickets, providing a convenient and efficient experience.	Activity Diagram
5	(Fikri, 2022)	A study analyzed the difference in customer satisfaction between online and offline ticket booking at PT KAI. The study found that there was a significant difference in customer satisfaction between the two methods, with online ticket booking having a higher level of satisfaction.	Descriptive, Quantitative
6	(Akbar, 2019)	Another study focused on the quality of service provided by the online ticket booking system and its impact on customer satisfaction. The study found that the quality of online ticket booking services has a positive effect on PT KAI customer satisfaction.	Quantitative
7	(Prayoga et al., 2022)	A study analyzed customer behavior in purchasing train tickets through the Acces By KAI application and found that factors such as service quality, brand image, and price	Descriptive, Quantitative

		perception can affect customer satisfaction.	
8	(Januarita, 2022)	Several studies have shown that the implementation of online ticketing applications can result in increased passenger numbers in the transportation sector. Ease of access, flexibility, and special offers for app users may be factors that support this growth.	Qualitative
9	(Normelia et al., 2022)	Previous studies analyzing the impact of technology in the transportation industry have also used regression analysis to measure the relationship between variables such as technology use and ridership. This method helps in identifying clearer relationships and quantifying possible impacts.	Quantitative
10	(Triani et al., 2023)	Other studies highlight the importance of considering external factors that may affect ridership, such as service quality or promotional campaigns. This helps in understanding changes in trends that may be caused by variables other than the app.	Quantitative

Source: Google Scholar

Overall, the study shows that online ticket booking can result in higher levels of customer satisfaction compared to offline ticket booking. The convenience and ease of use of online ticket booking applications can provide a more efficient and seamless experience for customers, leading to increased satisfaction. However, the quality of service provided by the online ticket booking system can also affect customer satisfaction, with other studies highlighting the importance of considering external factors that can affect ridership, such as service quality or promotional campaigns.

Through this literature review, it can be seen that the implementation of online ticket booking applications has the potential to influence the number of rail passengers. However, it is also important to consider external factors that may influence changes in ridership during the same period. This research will further contribute in exploring the concrete impact of these apps on rail passenger numbers in a specific context.

Methods

This research was conducted in August 2023. Secondary data with sources obtained from the Central Bureau of Statistics, namely the number of train passengers in Indonesia from 2008 to 2019. The data taken in the range of 2008 to 2019 has careful consideration. This is related to the launch of Acces By KAI in 2014. By taking a period of 6 years before and after 2014, the aim is to respond to the significant developments that occurred along with the emergence of the platform. The selection of the period was based on several considerations. First, the launch of Acces By KAI in 2014 is considered an important inflection point in rail access services in Indonesia. Secondly, the 6-year period before 2014 allows us to see trends and patterns that were already in place before the launch, while the 6-year period after 2014 will cover the medium-term impact of the changes. Not only that, the reason for not taking data for 2020 and 2023 is also very reasonable. The year 2020 was marked by the emergence of the COVID-19 pandemic that disrupted various aspects of life, including the data relevant for analysis. Meanwhile, the 2023 data cannot be used because the year has not yet been completed, so no complete information can be retrieved. As such, this approach provides an opportunity to see the impact of the Acces By KAI rollout clearly, without being affected by external disturbances that affect the validity of the data.

This research uses a quantitative approach. Researchers separated data on the number of train passengers before and after the introduction of Acces By KAI in Indonesia. Details of the research steps can be seen in Figure 1.

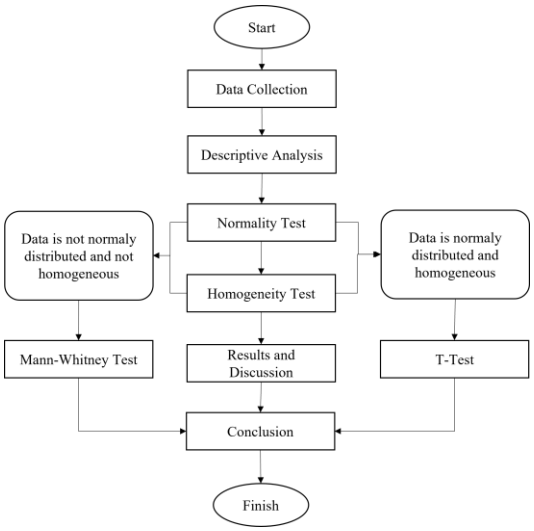

Figure 1. Research Flow Chart

The explanation in Figure 1 regarding the research stages is as follows:

- In the early stages of the research, the process of collecting data sourced from scientific literature, mainly through Google Scholar, was carried out. This step was taken to obtain more in-depth information from various scientific journals, which would provide a strong foundation and strong arguments in the context of the research findings as well as assemble a substantial background. Meanwhile, the Central Bureau of Statistics (BPS) was used as the main data source, due to its reputation for presenting data of high integrity and reliable validity, providing a solid empirical basis for the analysis in this study.
- The collected data were then analyzed descriptively to obtain statistical information such as the mean value, standard deviation value, and the amount of data.
- Checking the distribution of data whether it is normal or not through the Kolmogorov-Smirnov test. The hypotheses tested are:
  H0 : Residual data has a normal distribution
  H1 : Residual data does not have a normal distribution
  If the data is normally distributed, proceed with the T-Test hypothesis test. However, if the data distribution is not normal, the Mann-Whitney nonparametric test is used.
- The homogeneity of variance was tested through Levene's test. The hypotheses tested were:
  H0 : Variance between groups is homogeneous
  H1 : The variance between groups is not homogeneous
  If the variance between groups is homogeneous, proceed with the T-Test hypothesis test, if the variance between groups is not homogeneous, a nonparametric hypothesis test analysis is carried out using the Mann-Whitney Test.
- In the Mann-Whitney test, the implementation is carried out under the following conditions:
  a) The data used does not meet the requirements of the t test.
  b) There are results that do not follow a normal distribution when the data normality test is performed.
  c) Certain assumptions are not needed to reach general conclusions.
  The hypotheses applied to the Mann-Whitney test are:
  H0 : There is no difference between groups 1 and 2.
  H1 : There is a difference between groups 1 and 2.

  After the analysis is completed, the results are used in the discussion and conclusion. If the conclusion has been found, then the research is considered complete.

Result and Discusssion

In looking at the development of rail passenger numbers in Indonesia, data taken from Statistics Indonesia for 2023 shows a comparison between two relevant periods: six years before and six years after the launch of Acces By KAI in 2014. Through the table provided, we can analyze the significant changes in passenger numbers on the islands of Java, Sumatra, as well as the two islands combined. These observations provide valuable insights into the impact of Acces By KAI services on public mobility trends and rail service utilization over the period.

Table 4. KAI Passenger Count Data

Before Acces By KAI					
No	**Period**	**Jawa**	**Sumatera**	**Jawa & Sumatera**	
1	2008	190.138	3.939	194.077	
2	2009	199.422	4.119	203.541	
3	2010	198.028	5.241	203.269	Thousands
4	2011	194.041	5.296	199.337	of people
5	2012	197.795	4.384	202.179	
6	2013	212.015	3.995	216.010	
	Total			1.218.413	
After Acces By KAI					
No	**Period**	**Jawa**	**Sumatera**	**Jawa & Sumatera**	
1	2014	272.604	4.904	277.508	
2	2015	320.621	5.324	325.945	
3	2016	345.839	5.981	351.820	Thousands
4	2017	386.362	6.907	393.269	of people
5	2018	414.345	7.784	422.129	
6	2019	419.878	8.128	428.006	
	Total			2.198.677	

Source: (Badan Pusat Statistik, 2023)

Prior to the launch of Acces By KAI in 2014, data showed interesting trends in rail passenger numbers in Indonesia, particularly on the islands of Java and Sumatra. From 2008 to 2013, several patterns of change can be identified:

- Gradual increase: Passenger numbers in 2008 started with around 194,077 thousand people in Java and Sumatra. Over the next few years, there was a gradual increase in the number of passengers, albeit in relatively stable numbers.
- Annual fluctuations: During this period, there were annual fluctuations in the number of passengers. Some years, such as 2010, saw an overall decline in passenger numbers.
- Stable in Java and Sumatra: Despite annual fluctuations, the total number of passengers on the islands of Java and Sumatra is relatively stable, with less significant fluctuations.
- Java dominance: Java continues to dominate in passenger numbers compared to Sumatra before the launch of Acces By KAI. This shows that the trend of using train services is higher in Java.
- Consistent growth in Sumatra: Although the number of passengers in Sumatra was lower compared to Java, there was relatively consistent growth throughout the period. This can be indicated by the increase in the number of passengers on the island of Sumatra from year to year.

Trends prior to the launch of Acces By KAI indicate a growing need and potential for rail services, especially on the island of Java. Annual fluctuations may be affected by various factors, such as economic changes, holiday seasons, and others.

Following the launch of Acces By KAI in 2014, there has been a significant change in the trend of rail passenger numbers in Indonesia, especially on the islands of Java and Sumatra. Data from 2014 to 2019 shows some identifiable patterns of change:

- Drastic increase: After the launch of Acces By KAI in 2014, there was a considerable increase in the number of rail passengers on both islands. It can be seen that the number of passengers in Java and Sumatra increased significantly, showing the positive impact of the launch of this new service.
- Consistent growth: The upward trend in the number of rail passengers in Java and Sumatra after the launch of Acces By KAI is seen to tend to be consistent over the period 2014 to 2019. This growth may reflect the traction generated by Acces By KAI in improving the accessibility and convenience of train travel.
- Java's dominance continues: As before, the island of Java continues to dominate in passenger numbers compared to Sumatra. However, after the launch of Acces By KAI, the growth in the number of passengers in Java is seen to be more significant.
- Rapid growth in Sumatra: One of the striking trends is the rapid growth in passenger numbers in Sumatra after the launch of Acces By KAI. This can probably be attributed to the increased accessibility brought about by Acces By KAI as well as increased public awareness of rail services.
- Increase in total number of passengers: When looking at the total number of passengers on the islands of Java and Sumatra, there is a noticeable increase after the launch of Acces By KAI. If previously the number of passengers was only around 1.2 million thousand people in six years, after the launch of Acces By KAI, the number of passengers almost doubled to around 2.2 million thousand people in the same period.

Trends following the launch of Acces By KAI show the positive impact the new service has had on increasing train usage. Improved accessibility, ease of ticket purchase, as well as improved service quality may be factors contributing to this significant growth.

In analyzing the impact of the implementation of Acces By KAI on train service usage in Indonesia, Table 5 provides a useful descriptive analysis. In this table, we can see a comparison between two periods: before and after the implementation of Acces By KAI. Through the average number of passengers and the standard deviation of the data, we can understand the significant changes in the level of train usage as well as the variations that occur in the usage trend. This analysis provides an initial picture of the effectiveness and positive impact of the launch of Acces By KAI on people's mobility in using train services.

Table 5. Descriptive Analysis Before and After Implementation of Acces By KAI

Classification	N	*Mean*	*St. dev*
Before Acces By KAI	6	202.990,33	2.961,231
After Acces By KAI	6	366.446,00	24.065,098

Source: Analysis

The table above provides a descriptive analysis of the comparison between the period before and after the implementation of Acces By KAI. The data includes the number of observations (N), mean (Mean), and standard deviation (St. dev) of train passenger data in thousand people. From this analysis, it can be seen that after the implementation of Acces By KAI, there was a significant increase in the average number of train passengers. The average number of passengers per year increased from around 202,990 thousand people to 366,446 thousand people after the implementation of Acces By KAI. The higher standard deviation in the period after Acces By KAI indicates greater variation in passenger data.

This change illustrates that the implementation of Acces By KAI has succeeded in significantly increasing the use of train services, along with an increase in the average number of passengers and a wider variation in the data. In the statistical analysis process, the use of normality and homogeneity tests is a critical step in understanding the characteristics of the data used.

Table 6. Normality and Homogeneity Test Results Before and After Implementation of Acces By KAI

Test	P-Value	Conclusion
Normality	0.005	The p-value < 0.05: There is sufficient statistical evidence to reject the null hypothesis of data normality.
Homogeneity	0.003	The p-value < 0.05: There is sufficient statistical evidence to reject the null hypothesis of data normality.

Source: Analysis

The normality test results show that the data does not meet the assumption of normal distribution with a p-value that is lower than the predetermined significance level. Similarly, the results of the homogeneity test showed that the data also did not meet the assumption of homogeneity of variance. Therefore, conclusions drawn from further analysis should consider the impact of these non-normal characteristics and heterogeneity of the data on the validity of the research results.

In an attempt to understand the differences between two groups of data that do not meet the assumptions of normality and homogeneity, this study applied the Mann-Whitney U Test.

Table 7. Mann-Whitney Test Results Before and After Implementation of Acces By KAI

Test	P-Value	Conclusion
Mann-Whitney	0.003	The p-value < 0.05: There is sufficient statistical evidence to reject the null hypothesis of group differences.

Source: Analysis

In an attempt to understand the difference between two groups of data that do not meet the assumptions of normality and homogeneity, this study applied the Mann-Whitney U Test. The results of this test yielded a p-value of 0.003, which is significantly lower than the predetermined significance level. Thus, there is sufficient statistical evidence to reject the null hypothesis, indicating a significant difference between the two groups being compared. The Mann-Whitney test is an appropriate alternative in situations where data do not meet the assumptions of normality and homogeneity, and these results provide important insights into the comparison being tested.

The results of data processing in this study indicate that there are differences between train passengers before the existence of Acces By KAI and after the existence of Acces By KAI in Indonesia. Based on the average value obtained by the train passenger group before and after the existence of Acces By KAI, it has shown better value results in the group after Acces By KAI than before Acces By KAI.

Conclusion

Based on the data analysis conducted, the results show a significant impact of the launch of an online ticket booking application (Acces By KAI) on the increase in rail passenger numbers in Indonesia. In this context, the utilization of this application also shows a positive correlation with fluctuations in passenger numbers, and indicates a more consistent trend change after the introduction of this digital solution. While there are external factors such as changes in economic conditions and promotional campaigns that also impact ridership fluctuations, the influence exerted by the use of online ticketing apps was identified as the dominant factor. This finding has meaningful implications for the formulation of marketing strategies and future development of rail services. It highlights the urgency of technology adoption in an effort to improve accessibility and convenience for rail passengers. As such, this research provides an in-depth look at the potential role of technology in optimizing the rail transport sector as well as providing a foundation for decision-making geared towards enhancing the passenger experience and improving the efficiency of services provided by rail companies

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