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Enhancing Customer Satisfaction in Commuter Rail Services through Multimodal Integration and Digital Payment Adoption: A Case Study in Greater Bandung

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Abstract: This study evaluates customer satisfaction with Commuter Line services in Area II of Bandung during the new normal era. The study focuses on multimodal transportation integration and digital payment system implementation. A survey was conducted with 616 respondents representing the various demographics of service users. The results of the analysis show that customers are highly satisfied with the provided services, especially regarding cleanliness, comfort, and digital accessibility. Technology application and improved accessibility have proven to be key factors in creating a positive travel experience. However, Importance Performance Analysis (IPA) results indicate that improvements to the bank transfer payment system are needed to meet customer expectations. These findings provide a foundation for developing adaptive, responsive, and inclusive strategies to improve the quality of public transportation services.

Keywords: customer satisfaction, transportation, multimodal, digital payments, Commuter Line.

INTRODUCTION

In the new normal era, studying customer satisfaction has become very important, especially for Commuter Line users in Area II, Bandung. With the increasing need for mobility, multimodal transportation and digital payment systems have become crucial aspects that must be considered. A transportation system that involves various modes, such as trains, buses, and online transportation, is needed to meet customer expectations for efficient and comfortable travel. Previous research indicates that service quality and system integration significantly influence customer satisfaction in the transportation sector (Katili et al., 2019; Setyawati & Hasan, 2021).

In the context of the Commuter Line, studies indicate that factors such as service quality, customer value, and customer expectations significantly influence their satisfaction levels (Partogi et al., 2018; Ratnawita et al., 2023). Service quality, which includes factors such as speed, comfort, and ease of access, directly contributes to user satisfaction and loyalty. During the new normal period, when people prefer to avoid crowds, operators need to improve these aspects to compete in providing effective transportation services.

In addition, the integration of digital payment systems has become an increasingly relevant innovation. The adoption of financial technology (fintech) in payment systems offers ease and speed of transactions, which are key considerations for customers (Murati, 2020; Perdana et al., 2023). Research shows that good quality electronic services and payment systems in the digital era can increase customer satisfaction in sectors related to transportation (Perdana et al., 2023; Rita et al., 2019). The implementation of integrated payment systems at bus stops or stations is also expected to improve the overall customer experience.

However, challenges remain, such as issues related to safety and comfort during travel, which have been a major concern for public transportation users. Various reports indicate that passenger density and train delays are often factors that hinder customer satisfaction (Partogi et al., 2018; Ratnawita et al., 2023). Transportation service providers must focus on improving services, such as increasing train frequency and ensuring good train conditions, to create a more positive experience for users.

Finally, to accurately measure Commuter Line customer satisfaction, an appropriate and comprehensive methodology must be applied, including data collection from various sources and measurement tools. This will make it easier to understand customer expectations and needs, as well as make strategic decisions that can improve future services.

METHOD

This study uses a quantitative approach with a survey method to measure the level of customer satisfaction with Commuter Line Area II Bandung. The survey was conducted directly by enumerators at several strategic stations. The research instrument was a closed questionnaire designed based on five main dimensions, namely: CSI, CRI, NPS, CDI, and IPA. Data collection techniques included interviews, observations, documentation, and questionnaire completion using a Likert scale. A sample of 616 respondents was selected purposively, with the criterion being active Commuter Line users.

RESULTS AND DISCUSSION

The survey results show a very high level of customer satisfaction, especially in terms of cleanliness, comfort, and digital systems such as KAI Access. However, the bank transfer aspect received a less than optimal rating, indicating the need for improvement. In addition, the integration of other modes of transportation is an important requirement for improving customer efficiency and comfort during travel. The use of additional indices such as CRI, NPS, and CDI indicates strong user loyalty and satisfaction. NPS and CRI indicate that customers are likely to use the service again and recommend it to others.

Table 1. Customer Satisfaction Index (CSI)

Rank	Indicator	Satisfaction
1	Cleanliness and comfort	93.1%
2	Direction signs	92.8%
3	KAI Access ticketing	92.6%
4	Schedule accuracy	92.1%
5	Facilities for people with disabilities	92.1%
6	Facilities on the train	91.9%
7	General station facilities	91.6%

8	Area after Tap In	91.4%
9	KAI Mobile Access	91.0%
10	E-Wallet	90.9%
11	Tap In	90.5%
12	Bank transfer	90.1%
13	Social media	89.7%
14	Ticket counter	88.6%
15	Website	85.0%

Source Research Results

The following is a detailed explanation of each dimension of satisfaction:

1. Satisfaction with Station Facilities (91.6%):
   This includes waiting rooms, restrooms, prayer rooms, parking spaces, and the availability of information. A high score indicates that the facilities are adequate and provide comfort.
2. Satisfaction with Ticket Services:
   a. Ticket Counter (88.6%): Includes service speed, staff friendliness, clarity of information, and availability of counters. This score needs improvement.
   b. KAI Access Ticketing (92.6%): Ease of use, comprehensive features, reliability, and transaction speed contribute to the high score.
3. Satisfaction with Payment Channels:
   E-Wallet (90.9%), Tap In (90.5%), Bank Transfer (90.1%): These three payment methods demonstrate the ease and availability of payment options for customers.
4. Satisfaction with Digital Channels and Applications:
   a. Website (85.0%): The ease of navigation, loading speed, completeness of information, and ease of booking through the website need to be improved.
   b. Mobile Access KAI (91.0%): Access to KAI information and services via mobile devices, in addition to the KAI Access app, is rated as good.
   c. Social Media (89.7%): The effectiveness and responsiveness of KAI on social media need to be improved.
5. Satisfaction with Travel Experience:
   a. Cleanliness and Comfort (93.1%): The cleanliness of the carriages, station areas, temperature, air circulation, and seating comfort contributed to the high score.
   b. Facilities on the Train (91.9%): The condition of the seats, air conditioning, toilets, power outlets, and entertainment facilities were rated as good.
6. Satisfaction with Special Facilities (Services for People with Disabilities and Directional Signs):
   a. Facilities for People with Disabilities (92.1%): The availability and quality of facilities for people with disabilities, such as ramps, elevators, special toilets, and priority seating, were rated as good.
   b. Directional Signs (92.8%): The clarity of information and directional signs at stations facilitates navigation.
7. Train Schedule Accuracy (92.1%): The punctuality of departure and arrival times, as well as information provided in case of delays, were rated as good.

Table 2. Customer Repurchase Index (CRI)

Indikator	Frekuensi	Persentase	Skor	
How often do you use the Commuter Line in a week?				
a. 4 trips or more	614	99.7%	2456	99.8%
b. Less than 4 trips/journeys	2	0.3%	4	
Apakah Anda akan tetap menggunakan Commuter Line di masa mendatang?				

a. Will you continue to use the Commuter Line in the future?	478	77.6%	1912	94.2%
b. Maybe I'll stick with the commuter line.	133	21.6%	399	
c. Perhaps switching to another mode of transportation	4	0.6%	8	
d. Definitely switch to another mode of transportation	1	0.2%	1	
CRI				97.0%

Source Research Results

A CRI of 97.0% is a very high figure. CRI measures a service's ability to retain its customers over time. A figure of 97% indicates that Commuter Line is very successful in retaining its users. This is a very positive performance indicator. Although the results are very positive, there are a few things to note: The “Maybe” Group: Further research is needed to understand the factors that make 21.6% of respondents still unsure about continuing to use Commuter Line. By understanding their concerns, the Commuter Line can take steps to enhance their loyalty. Switching Group: Although the number is small, it is important to know the reasons why 0.8% of respondents may or will definitely switch to another mode of transportation. This information can be used to prevent user loss. Maintaining Quality: It is important to continue maintaining and even improving service quality to sustain a high CRI level.

Table 3: Net Promotor Score (NPS)

Indicators	Frequency	Percentage
Would you recommend Commuter Line to friends or family?		
a. Definitely yes	579	94.0%
b. Maybe	37	6.0%
c. Definitely no	0	0.0%
Total	**616**	**100%**
	NPS	**94.0%**

Source Research Results

An NPS of 94.0% is an exceptionally high figure. NPS is calculated by subtracting the percentage of detractors from the percentage of promoters. In this case, 94% (promoters) - 0% (detractors) = 94%. NPS ranges from -100 to +100. An NPS above 70 is considered very good, and 94% far exceeds that figure. This indicates that Commuter Line has a highly loyal and satisfied customer base. Although the results are very positive, there are still a few things to note:

1. “Maybe” group: Efforts should be made to understand what makes 6% of respondents still hesitant to give a “Definitely yes” recommendation. By understanding their reasons, Commuter Line can take steps to improve their satisfaction and turn them into promoters. Further surveys or feedback can be conducted to explore this information.
2. Maintaining Quality: It is crucial to maintain and continuously improve service quality to sustain a high NPS score. Customer satisfaction is a valuable asset that must be preserved.

Table 4: Customer Delight Index (CDI)

Indicators	Frequency	Percentage
Have you ever experienced any problems when using the Commuter Line?		
a. **Yes**	181	29.4%
b. **No**	435	70.6%
Have you ever filed a complaint regarding Commuter Line services?		

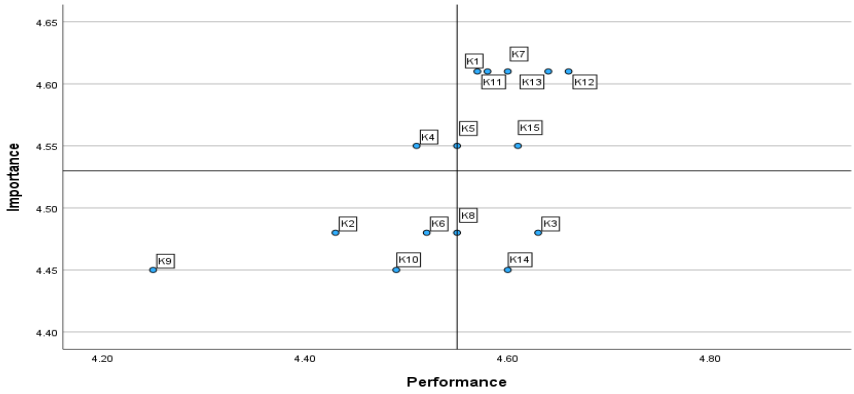
a. **Yes**	34	5.5%
b. **No**	582	94.5%
Total	**616**	**100%**

Source Research Results

Its connection with CDI:

1. Service success: If the majority of customers are satisfied or free from disruptions, the service can create delight for most users.
2. Service challenges: Disruptions experienced by 70.6% of users indicate opportunities to improve certain aspects so that customers more often feel that the service exceeds their expectations.
3. Optimal complaint channels: Customers who feel heard (through effective complaint mechanisms) tend to be more satisfied and even delighted. The low complaint rate (5.5%) may indicate a need to improve communication regarding complaint mechanisms.

Table 5: Importance Performance Analysis (IPA)



Source: Research Results

Figure 1 : Importance Performance Analysis (IPA)

The following is an interpretation of the results of the Importance Performance Analysis (IPA) based on the table and diagram above.

1. Quadrant A (Top Priority): Fix immediately! The main focus should be on improving T4 (Bank Transfer). Identify specific problems, allocate sufficient resources, and monitor the results.
2. Quadrant B (Maintain Performance): Maintain and Improve! Maintain good performance on T1, T5, T7, T11, T12, T13, and T15. Look for opportunities for further improvement if possible, and ensure standards are maintained.
3. Quadrant C (Low Priority): Monitor and Evaluate! Although not a top priority, continue to monitor T2, T6, T9, and T10. In particular, T9 (Website), which has the lowest performance in this quadrant, needs to be evaluated further. Improvements can be made if there are excess resources or if the importance of these attributes increases.
4. Quadrant D (Potential Overkill): Evaluate Resource Allocation! Review resource allocation for T3 and T8 to ensure efficiency. For T14 (Disability Facilities), do not reduce resource allocation. Although it is in Quadrant D and considered less important by the majority, this facility is crucial for inclusivity and the fulfillment of the rights of people with disabilities. Ensure that this facility always functions properly.

Based on the results of the Importance Performance Analysis (IPA), it appears that the Bank Transfer (T4) dimension occupies Quadrant A as a top priority that requires immediate improvement. This reflects a gap between customer expectations regarding ease of payment

and the actual performance of the service. In the context of modern transportation digitalization, this aspect is a crucial point that can affect the overall perception of service quality. A thorough evaluation of technical and procedural barriers that hinder transaction convenience is required, followed by the allocation of adequate resources to improve the system and enhance speed, security, and integration across payment platforms. With a measured and responsive approach, improvements in this area will not only meet customer expectations but also strengthen Commuter Line's reputation as an adaptive public transportation service focused on user experience.

The results of the analysis of digital payment systems show that the majority of customers use digital payment methods. The satisfaction rating for e-wallet usage reached 90.9%, higher than that for bank transfers at 90.1%. Although bank transfers are considered important for payment flexibility, the results of the Perceived Importance-Performance Analysis (IPA) show that the performance of bank transfers is still not optimal, indicating a need for improvement in this area. Therefore, Commuter Line operators need to evaluate and improve the user experience in using bank transfers to ensure that all payment methods provide convenience for customers.

The aspect of multimodal transportation integration is also an important finding in this study. Most customers are known to utilize other modes of transportation before and after using the Commuter Line, highlighting the importance of integration between the Commuter Line and other transportation modes such as buses, ride-hailing services, and other public transportation. This suggests that to enhance travel comfort and efficiency, the transportation system must enable better connectivity among modes, thereby providing users with a more holistic travel experience.

In this study, the Customer Repurchase Index (CRI) for Commuter Line services in Area II Bandung recorded an impressive figure of 97%, indicating that almost all respondents have a strong intention to use the service again in the future. This high CRI value reflects PT KCI's success in creating a customer experience that is not only satisfying but also sustainable. According to previous research, as shown by Putra & Suparna, 2020, good service quality significantly influences customer loyalty, where customer delight acts as a mediating variable (Putra & Suparna, 2020). This aligns with the findings of this study, which indicate that factors such as consistency and reliability of service play a key role in customers' repurchase decisions.

Furthermore, the Net Promoter Score (NPS) result of 94% shows that the majority of service users are willing to recommend Commuter Line to others, indicating a positive emotional connection between customers and the service. This figure falls into the excellent category according to NPS benchmarks. This finding aligns with the results reported by Gu, 2022, who emphasized that positive customer experiences can drive high levels of loyalty and recommendations (Gu, 2022). Other research also states that customer satisfaction not only contributes to repurchase behavior but also serves as an indicator of loyalty that can encourage voluntary recommendations among customers (Sotheara et al., 2015).

Furthermore, the Customer Delight Index (CDI), which states that 93.9% of respondents never filed a complaint, along with only 29.4% reporting disruptions, further confirms the fact that most customers are not only satisfied but also find the experience enjoyable while using the service. This shows that the service not only meets but also exceeds customer expectations. Research by (Ningsih et al., 2024) shows that brand experience and service quality are the main drivers of customer satisfaction, and customer delight plays an important mediating role in this relationship (Ningsih et al., 2024). The findings in this study support the premise that excellent service not only strengthens satisfaction but also creates emotional loyalty among customers.

Overall, high CRI scores, very positive NPS scores, and CDI scores indicating low complaint rates show that PT KCI has succeeded in building a service environment that is not only satisfying but also encourages long-term loyalty. This aligns with the findings of (Katili

et al., 2019) regarding the importance of creating service value that is not only functional but also emotional, where exceptional customer experiences contribute to loyalty and positive recommendations from users (Katili et al., 2019). By strengthening its focus on these aspects, PT KCI can continue to enhance its reputation and attract more customers in the future.

Overall, the analysis results show that Commuter Line in Bandung has made significant progress in improving customer satisfaction in the new normal era by prioritizing cleanliness, comfort, and easily accessible services through an efficient digital payment system. However, there is room for improvement in terms of bank transfer systems, as well as the need to focus on multimodal integration to maximize customer travel efficiency. Continued efforts to enhance these aspects are expected to further strengthen the Commuter Line's position as the primary transportation choice for the community in the Bandung area.

CONCLUSION

Commuter Line services in Area II Bandung are considered very satisfactory by the majority of customers, with a generally comfortable, clean, and accessible travel experience. Easy access through digital systems such as mobile applications and e-wallets has provided significant convenience for users, speeding up the ticketing process and travel information. High levels of satisfaction are also reflected in strong customer loyalty and minimal complaints and disruptions during service use.

However, there are still some areas of service that need improvement to maintain and even enhance service quality in the future. One aspect receiving special attention is the bank transfer payment method, which, although important, is not yet fully optimized. Additionally, the need for integration with other modes of transportation and the enhancement of train capacity are top priorities. This is crucial for supporting comfort and efficiency, especially in handling passenger surges during peak hours and facilitating intermodal connectivity in the Bandung region.

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