

Implementation of Green Airport and Digital Innovation on Service Quality and Passenger Satisfaction at Soekarno-Hatta Airport

Green Airport, Digital Innovation on Service Quality & Satisfaction

Murti Widyaningsih^{1*}, Adi Nugroho², Rika Kaniati³, Aisha Inggitha Putri Haryoso⁴

^{1,2,3,4}*Department of Management, Faculty of Economics and Business, Universitas Pancasila; Jakarta, Indonesia*

*Corresponding Author E-Mail: murtiwidyaningsih@univpancasila.co.id

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ABSTRACT

The increasingly competitive aviation industry requires airports to improve service quality and adopt digital innovation while also responding to growing environmental concerns through the implementation of green airport practices. Passenger awareness of sustainability issues has made environmental image an important factor in shaping passenger satisfaction. This study aims to examine the effect of service quality and digital innovation on passenger satisfaction, with the green airport acting as a mediating variable at Soekarno-Hatta International Airport. A quantitative research approach was applied using Covariance-Based Structural Equation Modelling (CB-SEM) combined with Importance–Performance Analysis (IPA). Data were collected from 100 passengers through a structured questionnaire using a Likert scale and analyzed to assess both direct and indirect relationships among variables. The findings reveal that service quality has a significant indirect effect on passenger satisfaction through the green airport, indicating full mediation. In contrast, digital innovation shows no statistically significant effect on either the green airport or passenger satisfaction. Furthermore, the IPA results indicate that these environmental sustainability programs play a significant role in improving passenger satisfaction and airport image. In conclusion, strengthening green airport initiatives plays a crucial role in enhancing passenger satisfaction and supporting sustainable airport management.

Keywords: Digital Innovation, Green Airport, Passenger Satisfaction, Service Quality, Sustainable Aviation.

INTRODUCTION

Airports play a crucial role in connecting people across the world and supporting economic growth. As key components of the air transport system, airports are required to continuously improve service quality while adopting environmentally friendly practices in line with the green airport concept. The COVID-19 pandemic accelerated digital transformation in the aviation industry, compelling airports to implement contactless and technology-based service innovations while remaining responsible for public health and environmental sustainability (Okulicz & Chikha, 2021). Soekarno-Hatta International Airport in Indonesia represents a clear example of such modernization. Nevertheless, the airport continues to face challenges in maintaining passenger satisfaction, as reflected in declining Airport Service Quality (ASQ) assessments reported by Airports Council International (2016).

This study focuses on Soekarno-Hatta International Airport during the period 2020–2025 and examines the influence of service quality and digital innovation on passenger satisfaction through the implementation of green airport practices. The scientific contribution of this research lies in integrating behavioral and environmental perspectives within service management through a combined SEM–IPA approach. The study assumes

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that service quality and digital innovation enhance passenger satisfaction, both directly and indirectly, through the green airport. The expected outcomes include identifying key sustainability factors that affect satisfaction and developing a managerial framework for prioritizing improvement areas based on importance–performance alignment.

Previous empirical studies have demonstrated strong relationships between service quality, innovation, and customer satisfaction in airport contexts (Lubis & Bunahri, 2022; Firmansyah & Sari, 2023; Rosefira, 2023). Research by Zhang et al. (2023) emphasizes that innovation in air transport services is primarily aimed at improving service quality, as passenger comfort is essential for enhancing airport image and financial performance. Innovation also contributes to value creation by meeting evolving customer needs, increasing organizational revenue, and encouraging creativity and service diversification (Rogers, 2009; Sasmiyarsi & Meliana, 2019).

However, research examining the mediating role of environmental performance in the airport industry remains limited. Several studies suggest that service quality alone does not fully explain passenger satisfaction, indicating the need to consider additional factors such as digital innovation and environmental perception (Nugroho, 2021). This suggests that direct relationships between service quality and satisfaction may be overly simplistic, requiring more complex mediation models to better understand passenger satisfaction dynamics.

Inconsistent findings in the literature further highlight the need for context-specific research. Fakhrudin (2021) and Sugiantari et al. (2024) found that service quality and facilities significantly influenced satisfaction at Notohadi Negoro Jember Airport, whereas Firmansyah and Sari (2023) reported that facilities had no significant effect on satisfaction at Abdulrachman Saleh Malang Airport. Similarly, Kasinem (2021) and Subandi et al. (2025) showed that trust significantly affected customer satisfaction, while service quality was not significant in the hospitality context. These inconsistencies suggest that relationships among service quality, innovation, and satisfaction depend on organizational scale, passenger characteristics, cultural context, and operational conditions.

This study by Bazerra and Gomes (2016) and Poerwadi et al. (2024) addresses the green airport concept as a mediating variable linking service quality and digital innovation to passenger satisfaction. Sustainable practices and environmental performance are expected to strengthen service quality perceptions and enhance the effectiveness of digital innovation. As passenger awareness of environmental issues increases, green airport initiatives may directly improve satisfaction while reinforcing the impact of traditional service quality and digital innovation. This integrated approach recognizes that modern airport management must simultaneously address operational efficiency, technological advancement, and environmental sustainability to achieve higher passenger satisfaction. Therefore, the objective of this study is to analyze the direct and indirect effects of service quality and digital innovation on passenger satisfaction, with green airport acting as a mediating variable.

LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

Factors Influencing Passenger Satisfaction

In airport operations, service quality remains a key determinant of passenger satisfaction. Parasuraman and Zeithaml (2000) conceptualized service quality through the five SERVQUAL dimensions, namely tangibility, reliability, responsiveness, assurance, and empathy, which are widely used to evaluate service performance across sectors, including aviation. In the airport context, service quality is reflected in clean and adequate physical facilities, responsive staff, accurate digital information, and reliable operational processes (Barus et al., 2024). Service quality plays a critical role in overall airport performance. Bazerra and Gomes (2016) emphasize that airports are continuously required to deliver high-quality services to enhance passenger satisfaction. Strong empirical evidence supports a positive relationship between service quality and passenger satisfaction. Halpern and Mwesiumo (2021), based on an analysis of thousands of global

online passenger reviews, found that service failures involving airport personnel and waiting times significantly reduced the likelihood that passengers would recommend an airport. This finding highlights the importance of tangibility, reliability, and responsiveness in shaping satisfaction.

Several studies conducted in Indonesia also confirm the significant influence of service quality on passenger satisfaction (Fakhrudin, 2021; Lubis & Bunahri, 2022; Saragih & Dyahjatmayanti, 2022; Rosefira, 2023; Firmansyah & Sari, 2023; Oliveira et al., 2023; Oliveira et al., 2024). Moreover, higher passenger satisfaction has financial implications, as a 1% increase in satisfaction can raise non-aeronautical revenue by an average of 1.5% (Airport Information Systems, 2024). However, the literature presents mixed results. Akram et al. (2022) found that trust had a stronger effect on customer satisfaction than service quality, while Bakır et al. (2022) reported that facilities did not significantly affect satisfaction in certain airport settings. The COVID-19 pandemic further reshaped passenger expectations, particularly regarding cleanliness and safety standards (Chen et al., 2026). Recent studies also indicate that psychosocial factors influence satisfaction and may not be fully captured by traditional service quality models (Oliveira et al., 2023).

H1: Service quality has a positive effect on passenger satisfaction.

H2: Digital innovation has a positive effect on passenger satisfaction.

H3: Green airport has a positive effect on passenger satisfaction.

Factors Influencing Green Airport

Digital innovation refers to the application of new technologies to improve service processes and enhance user experiences (Sasmiyarsi & Meliana, 2019; Xu, 2025). In the airport context, digital innovation involves using digital technologies to create new ways to deliver value through products and services. Following the COVID-19 pandemic, airports increasingly adopted digital check-in systems, biometric verification, mobile applications, and automated services to improve operational efficiency and passenger convenience. Digital technology, which is fundamentally based on binary data processing, enables faster information exchange and supports more integrated service systems. The integration of advanced technologies such as Artificial Intelligence (AI) and Augmented Reality (AR) has significantly improved airport operational efficiency and passenger satisfaction. Recent evidence shows that over 48% of Tier 1 airports had implemented AI-based systems for predictive maintenance and crowd management by 2024. These technologies have reduced passenger waiting times by approximately 23%, increased security efficiency by 16%, and raised overall passenger satisfaction by 8% (Wavetec, 2024). Such improvements demonstrate the potential of digital transformation to shift airports toward more passenger-oriented and efficient operational models.

Digital innovation in airports is commonly reflected in three main dimensions: the development of new digital service models, the creation of innovative digital services, and enhanced digital interaction with passengers. Empirical studies confirm a positive relationship between digital innovation and customer satisfaction, where innovation processes significantly influence satisfaction and customer loyalty (Ayinaddis, 2023; Nguyen et al., 2024). The rapid growth of the global airport digital transformation market further reflects this trend, driven by increasing demand for efficiency and improved passenger experience. Despite its benefits, digital transformation presents challenges, including system integration, interoperability, cybersecurity risks, regulatory compliance, and workforce readiness. Addressing these issues requires strategic planning and a comprehensive technological approach to fully realize the potential of digital innovation in modern airport operations.

Passenger satisfaction is a key outcome of service performance and occurs when service experiences meet or exceed expectations (Oliver, 1994; Zeithaml, 2000). At airports, satisfaction is commonly measured by expectation fulfillment, intention to return, and willingness to recommend services (Nugroho, 2022). Main factors affecting satisfaction include staff behavior, waiting time, service quality, overall experience, and

customer engagement. Satisfaction directly influences travel intentions and passenger loyalty, while perceived value and service quality affect loyalty indirectly.

- H4: Service quality has a positive effect on green airports.
H5: Digital innovation has a positive effect on green airports.

Green Airport as a Mediator Variable

The green airport concept emphasizes environmental awareness, efficient resource use, and the reduction of waste and carbon emissions in airport development and operations (Desenvolvimento, 2023). It aims to minimize the negative environmental impacts of airport construction and activities and has become a strategic response to growing concerns about climate change and aviation emissions. As a result, environmental sustainability is increasingly viewed as a long-term priority in airport development.

To support this transition, international initiatives and regulatory frameworks have been introduced. Airports Council International (ACI), for example, promotes the Airport Carbon Accreditation (ACA) program to help airports measure, manage, and reduce carbon emissions. Green airport implementation focuses on key dimensions such as efficient land use, lifecycle-based environmental impact assessments, energy-efficient operations, and sustainable mobility systems. These dimensions enable airports to systematically reduce emissions while improving environmental performance.

Empirical evidence shows that sustainable airport practices provide multiple benefits. Green airports tend to be more resilient to economic shocks, achieve lower operating costs, enhance passenger satisfaction, and reduce climate-related risks. Prominent examples include San Francisco International Airport, which has invested in energy-saving projects, and Cochin International Airport in India, the world’s first fully solar-powered airport. Previous studies also confirm that green airport initiatives positively influence passenger satisfaction and green image perception, as observed at Yogyakarta International Airport (Poerwadi et al., 2024; Utami & Sugiyanto, 2025). Despite these advantages, green airport implementation faces challenges, including high initial investment costs and long payback periods. Therefore, integrated and long-term planning is essential to ensure balanced environmental, social, and economic sustainability.

- H6: Green airport mediates the relationship between service quality and passenger satisfaction.
H7: Green airport mediates the relationship between digital innovation and passenger satisfaction.

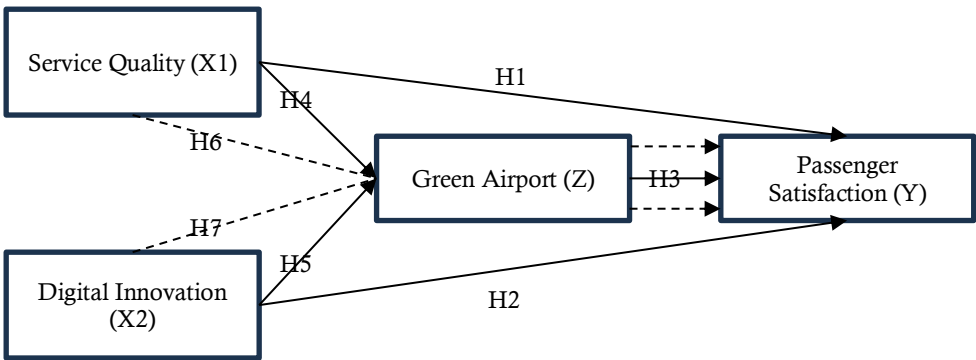


Figure 1. Research Framework

Figure 1 shows that the research model examines direct, joint, and indirect relationships among variables. X1 and X2 have direct effects on Y and jointly influence Y. In addition, X1 and X2 directly affect Z. Furthermore, Z acts as a mediating variable that transmits the effects of X1 and X2 on Y, indicating that the influence of both independent variables on Y occurs not only directly but also indirectly through Z.

RESEARCH METHODS

This study employed a quantitative explanatory approach, integrating Covariance-Based Structural Equation Modelling (CB-SEM) with Importance-Performance Analysis (IPA). Data was collected using purposive sampling from 100 passengers at Soekarno-Hatta International Airport who had experienced digital and environmentally oriented services. CB-SEM was applied to estimate the measurement and structural models simultaneously, enabling the examination of both direct and indirect relationships among service quality, digital innovation, green airport, and passenger satisfaction.

Reliability and validity were assessed using Composite Reliability (CR) and Average Variance Extracted (AVE). Model fit was evaluated through multiple goodness-of-fit indices, including the Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). After refining the measurement model, particularly for the Green airport construct, a confirmatory factor analysis was conducted to ensure construct validity.

The structural model tested the pathways through which service quality and digital innovation influenced both green airport and passenger satisfaction, with green airport also serving as a mediating variable. Model estimation produced standardized path coefficients, R^2 values for endogenous constructs, and confidence intervals derived from bias-corrected bootstrapping with 5,000 resamples. To enhance managerial relevance, SEM results were integrated into the IPA framework. Total effects obtained from SEM were used to represent importance, while mean Likert-scale scores reflected performance. Figure 2 shows that the indicator was then classified into four IPA quadrants: Keep Up the Good Work, Concentrate Here, Low Priority, and Possible Overkill, providing clear strategic guidance for prioritizing sustainability-oriented service improvements at the airport.



Figure 2. Importance-Performance Analysis (IPA) Grid

Figure 2 shows that the IPA methodology applies importance to weights derived from structural equation modelling (SEM) rather than subjective importance ratings, resulting in a more meaningful and managerially relevant assessment. The importance of the weight of each indicator is calculated by multiplying its standardized factor loading on the latent construct by the total effect of that construct on passenger satisfaction. Total effects include both direct influences and indirect effects through mediating pathways. For example, the importance of service quality indicators reflects not only their direct impact on satisfaction but also their indirect influence through the green airport. This SEM-aligned approach ensures that importance values accurately represent each indicator's real contribution to the outcome variable.

Performance is measured by the average Likert score for each indicator, reflecting passenger perceptions of actual service. The IPA grid maps performance on the horizontal

axis and SEM-based importance on the vertical axis, with a dividing line at the overall average value, creating four strategic quadrants. Quadrant I indicates attributes that should be maintained, Quadrant II shows priority areas for immediate improvement, Quadrant III represents low-priority attributes, and Quadrant IV indicates potential resource overallocation. The integrated SEM-IPA approach helps managers identify the service quality dimensions, green airport features, and digital innovation attributes that most influence passenger satisfaction and their alignment with strategic objectives.

RESULTS

Table 1 shows that all constructions are reliable, with the highest Cronbach's alpha for service quality (0.953), followed by green airport (0.820), digital innovation (0.756), and passenger satisfaction (0.733). Composite reliability for all constructs also meets the standards, indicating the consistency of the indicators in measuring their respective constructs. For convergent validity, service quality (AVE = 0.713) and passenger satisfaction (AVE = 0.655) are valid because AVE > 0.50, while digital innovation (AVE = 0.451) is only marginal, and green airport (AVE = 0.313) is weak. This is due to several indicators with low factor loadings, so improvements, especially for digital innovation and green airport, need to be considered to increase the validity of the measurement model.

Table 1. Validity and Reliability Test

Construct	Cronbach's Alpha	CR	AVE
Service Quality (X1)	0.953	0.963	0.713
Digital Innovation (X2)	0.756	0.831	0.451
Green Airport (Z)	0.820	0.858	0.313
Passenger Satisfaction (Y)	0.733	0.851	0.655

This weakness was mainly caused by several indicators with low factor loadings that blurred the distinction between environmental image and related outcomes. As a result, the construction explained only a limited proportion of indicator variance, increasing the risk of biased estimates. Therefore, the Covariance-Based Structural Equation Modeling (CB-SEM) approach is used because it simultaneously estimates measurement and structural models while accounting for measurement errors. CB-SEM also provides a comprehensive global model fit index, supports theory-based testing through CFA, allows for mediation testing with bootstrapping, and clearly distinguishes construct variance from error, especially for complex constructs such as green airport.

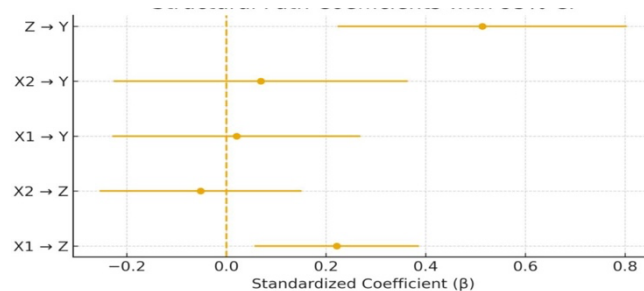


Figure 3. Structural Path Coefficients with 95% CI

Figure 3 shows the standardized coefficient (β) plot of the relationship between variables (X1, X2, Z against Y and Z). The dots indicate the magnitude of the effect, while the horizontal lines indicate the confidence interval. The dashed vertical line at $\beta = 0$ indicates the significance limit; relationships whose entire interval lies on one side of zero tend to be significant. Z → Y has the strongest and most positive effect, while the other relationships are relatively smaller and some are close to zero.

Table 2. Direct Effects Summary

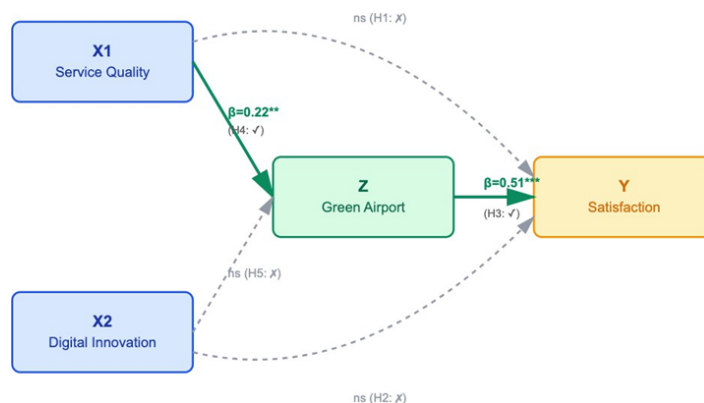
Hypothesis	Path	Standardized (β)	p- value	Result
H1	X1 $\rightarrow$ Y	0.02	0.875	Not supported
H2	X2 $\rightarrow$ Y	0.07	0.649	Not supported
H3	Z $\rightarrow$ Y	R ² (Y) = 0.13	–	Weak combined effect
H4	X1 $\rightarrow$ Z	0.22	0.010	Supported
H5	X2 $\rightarrow$ Z	–0.05	0.617	Not supported
H6	X1 $\rightarrow$ Z $\rightarrow$ Y	0.11 (bootstrapped CI = 0.011, 0.262)	–	Supported
H7	X2 $\rightarrow$ Z $\rightarrow$ Y	–0.03 (CI = –0.153, 0.084)	–	Not supported

Table 2 shows a clear mediation pattern, with the green airport as the key pathway influencing passenger satisfaction. Service quality has a significant positive effect on green airport ($\beta = 0.22$; H4 supported), indicating that better service improves passengers' environmental perceptions of the airport. Green airport also has a strong direct effect on passenger satisfaction ($\beta = 0.51$; H3 supported). The mediation analysis confirms that service quality affects satisfaction only through the green airport (H6 supported), showing full mediation. When the green airport is included in the model, service quality and digital innovation do not have significant direct effects on satisfaction (H1 and H2 not supported). In addition, digital innovation does not significantly influence green airport or passenger satisfaction (H5 and H7 not supported).

Table 3. Direct & Indirect Effects

Effect Type	Path	Standardized β	95% CI	Interpretation
Direct	X1 $\rightarrow$ Y	0.02	–	No direct effect
	X2 $\rightarrow$ Y	0.07	–	No direct effect
	Z $\rightarrow$ Y	0.51	(p<.001)	Strong direct effect
Indirect (Mediated)	X1 $\rightarrow$ Z $\rightarrow$ Y	0.11	[0.011, 0.262]	Significant mediation
	X2 $\rightarrow$ Z $\rightarrow$ Y	–0.03	(–0.153, 0.084)	Not significant

Table 3 shows that there is no direct effect of X1 and X2 on Y because their coefficients are very small and insignificant. In contrast, Z has a strong and significant direct effect on Y ($\beta = 0.51$; $p < 0.001$). Indirectly, X1 has a significant effect on Y through Z (significant mediation), while the indirect effect of X2 through Z is not significant because the confidence interval includes zero.

**Figure 4.** SEM Direct & Indirect Effects Diagram

The diagram that is ready for publication shows the results of the structural equation model in a clear and easy-to-understand way. Constructions are shown as coloured rounded rectangles: blue stands for independent variables (service quality and digital innovation), green stands for the mediator (green airport), and yellow stands for the outcome variable (passenger satisfaction). The colour coding makes it easy to see what each construction does in the theoretical framework. Line style and colour set path relationships apart. Solid green arrows show statistically significant pathways with

standardized coefficients next to hypothesis numbers. Dashed grey arrows show relationships that are not significant. This visual difference makes it easy for readers to see which hypothesized relationships were backed up by evidence.

Figure 4 shows that green airport fully mediates the effect of service quality on passenger satisfaction. Service quality has a significant effect on green airport ($\beta = 0.22$; $p = 0.010$; H4 is supported), and green airport has a strong effect on passenger satisfaction ($\beta = 0.51$; $p < 0.001$; H3 is supported). Digital innovation has no significant effect on green airport or passenger satisfaction, so H5 and H7 are not supported, indicating a weak role. This full mediation indicates that service quality affects passenger satisfaction only through the green airport (H6 is supported).

Importance–Performance analysis was conducted using cleaned data with a Likert scale of 1–5. Each item was grouped into the constructions of service quality, digital innovation, green airport, and passenger satisfaction. The performance score was calculated from the average Likert score for each item, reflecting respondents’ perceptions. For example, the item “Friendly staff” had an average score of 4.35, indicating excellent performance.



Figure 5. Important Performance Analysis

Figure 5 illustrates that the importance weights are derived directly from the SEM coefficients to align with statistical significance. Importance values are calculated from the standardized factor loadings multiplied by the total influence of the constructs on Passenger Satisfaction, with the total effect of $X1 = 0.13$, $X2 = 0.04$, and $Z = 0.51$. These values are then normalized to a 0–1 scale. Next, the IPA map plots items based on performance (x-axis) and normalized importance (y-axis) with a dividing line at the overall mean value.

Table 4. Distribution Items

Quadrant	Meaning	Managerial Implication	Items
I. Keep Up the Good Work	High importance, high performance	Continue investment and maintenance	4
II. Concentrate Here	High importance, low performance	Critical improvement area	9
III. Low Priority	Low importance, low performance	Minimal focus needed	12
IV. Possible Overkill	Low importance, high performance	Potential overallocation of resources	9

Table 4 shows the top five improvement priorities based on SEM-aligned IPA in quadrant II (concentrate here). All priority items are derived from the green airport (z) construct, emphasizing its role as a mediator between service quality and passenger satisfaction. This attribute is strategically important, yet its performance is still suboptimal, thus presenting significant opportunities for improving environmental sustainability. Management needs to strengthen communication regarding tangible green programs such as recycling, energy efficiency, and water reuse, while simultaneously promoting existing environmental programs. Visual analysis also indicates that the green airport is the most crucial area for strategic improvement because its investment will have the greatest impact on passenger satisfaction and the airport’s environmental image.

Table 5. TOP 5 Critical Improvement Priorities

Rank	Item (abbreviated)	Construct	Performance	Importance	Gap
1	Soekarno-Hatta Airport Conducts Sustainable Airport Environmental Management	Green Airport	4.47	1.00	+0.106
2	Using green technology at airports	Green Airport	4.42	0.913	+0.029
3	Technology-based environmental monitoring system	Green Airport	4.55	0.884	−0.026
4	Environmental information and campaigns are available in the airport area	Green Airport	4.61	0.891	−0.031
5	Use of recycled water at airports	Green Airport	4.64	0.864	−0.064

The IPA results identified five top-priority attributes in the concentrate here quadrant, as shown in Table 5. All of these attributes relate to green airport aspects, such as environmental awareness campaigns, energy savings, and the implementation of green technology. These findings indicate that environmental sustainability programs play a significant role in improving passenger satisfaction and airport image. The combination of SEM and IPA approaches provides both theoretical and practical contributions. Theoretically, green image can strengthen the relationship between service quality and customer satisfaction. Practically, this approach provides an evidence-based decision-making framework for prioritizing sustainability initiatives that align with passenger expectations and perceived performance.

DISCUSSION

This study provides a comprehensive understanding of the role of green airports in shaping passenger satisfaction, particularly in the context of international airports that are increasingly required to integrate service quality, digital innovation, and environmental sustainability. The main finding shows that service quality does not have a direct effect on passenger satisfaction but instead influences satisfaction entirely through green airport as a full mediator. This result indicates that high-quality service alone is not sufficient to enhance satisfaction unless it is translated into a positive environmental perception.

From a theoretical perspective, these findings support the value-based satisfaction approach, which suggests that customer satisfaction is influenced not only by functional service performance but also by ethical and symbolic values such as environmental responsibility. This result is consistent with recent studies by Chen and Lin (2021) and Han et al. (2022), which found that a green image strengthens the relationship between service quality and customer satisfaction in the transportation and tourism sectors. In the airport context, passengers appear to interpret good service as more meaningful when it is associated with environmentally responsible practices.

The strong direct effect of green airport on passenger satisfaction ($\beta = 0.51$) highlights environmental performance as a key driver of satisfaction. This finding aligns with recent research by Wang and Luo (2021) and Kim et al. (2023) which shows that green practices such as energy efficiency, environmental management, and sustainability communication significantly improve user evaluations of transport facilities. These results suggest that airports are no longer seen merely as transport infrastructure, but also as institutions responsible for supporting sustainability goals. In contrast, digital innovation does not show a significant effect on either green airport or passenger satisfaction. Although this finding differs from some earlier studies, it may be explained by the fact that digital technologies have become a basic expectation rather than a source of differentiation. According to Park and Kim (2022), digital innovation only improves satisfaction when it delivers clear added value or emotional benefits. In this study, digital features may not have been clearly linked to environmental benefits or sustainable experiences, which could explain their limited impact.

The results of the SEM-aligned Importance–Performance Analysis (IPA) further emphasize the strategic importance of the green airport. All top-priority improvement items in the concentrate here quadrant are related to green airport attributes, including sustainable environmental management, green technology use, environmental monitoring systems, awareness campaigns, and recycled water usage. This indicates a clear gap between high importance and relatively lower performance. Similar findings were reported by Alonso et al. (2024), who noted that environmental sustainability is often highly valued by users but not fully perceived in actual service delivery.

From a managerial perspective, these findings suggest that airports should prioritize investments in environmental sustainability initiatives and, importantly, improve how these initiatives are communicated to passengers. Visible green technologies, transparent environmental information, and clear sustainability campaigns can strengthen the airport's green image. When service quality is closely linked to environmental responsibility, passengers are more likely to perceive the overall experience positively.

CONCLUSION

This study finds that green airport fully mediates the relationship between service quality and passenger satisfaction, while digital innovation has no significant effect, either directly or indirectly. These findings highlight that environmental perception is a key factor in explaining how service quality translates into passenger satisfaction in the aviation service industry. Therefore, the main research objective, examining the mediating role of green airport and the relative influence of service quality and digital innovation, has been successfully addressed.

From a practical perspective, the results suggest that airport management should place greater strategic emphasis on strengthening the airport's green image. This can be achieved by making environmental initiatives more visible and understandable to passengers, such as the use of renewable energy, effective waste management systems, resource efficiency practices, and well-communicated environmental campaigns. Such efforts can enhance passenger trust, improve satisfaction, and reinforce the airport's reputation as an environmentally responsible organization. For future research, this model could be extended through comparative studies across different airports or regions to improve generalizability. In addition, longitudinal studies are recommended to examine the development and maturity of airport sustainability practices over time and to assess their long-term impact on passenger perceptions and satisfaction.

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