

February 2024

Designing experiences: Unveiling passenger perspectives through service design at an airport

İnci Polat

Suleyman Demirel University, incisesliokuyucu@sdu.edu.tr

Ahmet Ozturk

Suleyman Demirel University, ahmetozturk_official@outlook.com

Ruveyda Koc

Suleyman Demirel University, ruveydakoc@hotmail.com

See next page for additional authors

Follow this and additional works at: <https://digitalcommons.usf.edu/jght>



Part of the [Hospitality Administration and Management Commons](#), and the [Social and Behavioral Sciences Commons](#)

This Refereed Article is brought to you for free and open access by the M3 Center at the University of South Florida Sarasota-Manatee at Digital Commons @ University of South Florida. It has been accepted for inclusion in Journal of Global Hospitality and Tourism by an authorized editor of Digital Commons @ University of South Florida. For more information, please contact digitalcommons@usf.edu.

Recommended Citation

Polat, İ., Ozturk, A., Koc, R., & Inel, Y. (2024). Designing experiences: Unveiling passenger perspectives through service design at an airport. *Journal of Global Hospitality and Tourism*, 3(1), 254-268. <https://www.doi.org/10.5038/2771-5957.3.1.1035>

Corresponding Author

İnci Polat, Department of Aviation Management Isparta, Central, 32000

Revisions

Submission: Dec. 25, 2023; 1st Revision: Jan. 03, 2024; 2nd Revision: Jan. 30, 2024; Accepted: Feb. 02, 2024

Designing experiences: Unveiling passenger perspectives through service design at an airport

Authors

İnci Polat, Ahmet Ozturk, Ruveyda Koc, and Yudem Inel

Designing Experiences: Unveiling Passenger Perspectives Through Service Design at an Airport

Inci Polat¹, Ahmet Ozturk², Ruveyda Koc³, and Yudem Inel⁴

Department of Aviation Management
Suleyman Demirel University, Turkiye

¹incisesliokuyucu@sdu.edu.tr

²ahmetozturk_official@outlook.com

³ruveydakoc@hotmail.com

⁴yudeminel@hotmail.com

Abstract

Service design refers to applications that design, align, and optimize business operations to improve the experiences of both users and employees to support customers' journeys. The fundamental objective of this conceptual framework is not solely to fabricate a comprehensive, pleasurable, and unforgettable encounter for customers but also to create a sustainable, proficient, and fruitful resolution for providers. This study aims to measure passenger satisfaction using service design tools, such as customer journey maps and research walls, and to demonstrate the impact of service design experience on value co-creation and customer satisfaction. In this context, this study comprises two phases. The first stage includes an analysis of the customer journey map and research wall, which are service design tools. Thus, the satisfaction level of each touchpoint on the customer journey mapping (CJM) was evaluated. Comments written on post-it notes on the research wall were also analyzed through sentiment analysis. In the second stage, the survey administered to passengers participating in the service design process was analyzed using PLS-SEM. Passengers who were engaged in the service design application within the airport's boarding area were requested to conduct a survey to assess their viewpoints regarding the abovementioned application. Customer satisfaction is not directly affected by service design and value co-creation, according to the results of hypothesis testing. However, the results confirm the hypothesis, which asserts that the process of value co-creation significantly and positively influences service design. Mediation analysis did not verify that service design is significant in mediating the relationship between value co-creation and customer satisfaction. This study contributes to the understanding of service design from the passenger perspective to value co-creation and customer satisfaction literature based on service design.

Keywords: service design, value co-creation, satisfaction, experience, passenger

Introduction

Businesses are increasingly acknowledging the crucial role of customer satisfaction in pursuing economic sustainability and competitive advantage (Musriha, 2018). To go beyond mere adherence to customer expectations, organizations are now utilizing service design processes to gain deep insight into customer needs, thereby facilitating a comprehensive and effective customer experience. In recent years, service design has gained prominence as an emerging field, emphasizing a human-centered and interdisciplinary approach to meet evolving customer

requirements and expectations (Sun et al., 2020). The iterative process of service design involves important stages such as understanding customer needs, creating journey maps, prototyping, and testing (Brown & Katz, 2011). Based on an approach centered on humans and collaboration, service design also allows for the creation of a conducive environment for co-creating value (Martin-Pena et al., 2023). Characterized by its holistic approach to shaping user experiences across various touchpoints, service design provides airports with a means to orchestrate passenger journeys intricately. Meanwhile, the idea of value co-creation situates travelers as active participants in the advancement and enhancement of services, nurturing a collaborative dynamic between service providers and consumers. Value co-creation, which refers to the process of generating value through interactions between different actors such as the company and customer (Polat, 2021), assumes great significance in the context of airports, where personalized services and collaborative value creation are vital for establishing a strong bond between the business and customer (Sak et al., 2022).

This interplay becomes particularly significant within the airport context, given the multifaceted nature of services that demand a nuanced understanding of passenger preferences, expectations, and the intricate operational processes underpinning a seamless travel experience. By comprehensively understanding customer needs and enhancing the airport service process and environment, airports can deliver well-balanced services and maximize customer satisfaction (Kim et al., 2022). The intensifying rivalry in the aviation industry and the unpredictable nature of the market have transformed airports into versatile businesses. The scrutiny of service design in the airport industry is of supreme importance because of the expansion of non-face-to-face services and the imperative to optimize customer satisfaction. Consequently, a thorough investigation into the intricate dynamics of airport services, an examination of the necessity for operational efficiency, and an assessment of the consequential impact of passenger experience on airports' overall competitiveness would yield significant insights. In this context, this study analyzes the intricate interaction between value co-creation, experience driven by design, and customer satisfaction in the aviation sector. Utilizing a theoretical framework grounded in the principles of service design, the objective of this investigation is to uncover the intermediary function fulfilled by experience-driven service design in the connection between value co-creation and customer satisfaction. To achieve this objective, the investigation incorporates essential tools such as the research wall and journey map, which serve crucial functions in gathering customer insights and visualizing the customer experience journey. This study provides a comprehensive overview of the constantly evolving landscape of customer expectations, and the imperative necessity for businesses to adopt innovative methodologies. In this context, this study adds value to the ongoing discourse on service design, elucidating its applicability in the aviation industry and its potential to reshape the dynamics of customer satisfaction. Through empirical validation, this study aims to provide valuable insights for businesses endeavoring contemporary customer-centric strategies.

Literature Review

Businesses employ diverse methodologies and strategies to keep pace with the dynamic and variable framework of the market in which they operate while striving to attain a competitive edge. The fundamental objective of these strategies is to ensure customer satisfaction, thereby ensuring the enterprise's economic sustainability. However, in rapidly evolving industries, surpassing customer expectations and enhancing their experience can profoundly impact the success of a business both internally and in the marketplace. Service design, as an applied discipline, has

emerged from a cooperative and user-centric standpoint of service-dominant (S-D) logic (Vargo & Lusch, 2004). The implementation of S-D logic in scholarly literature requires the integration of alternative methodologies that enable continuous engagement with users throughout the iterative design process (Stickdorn et al., 2018). The S-D logic places significant emphasis on the collaborative generation of worth among the organization, its employees, and its customers. It acknowledges that value is co-created through interactions and encounters (Gallarza et al., 2023). Value co-creation entails the fusion of resources and skills to establish encounters and provide value to customers (Ajmal et al., 2023). The application of S-D logic to enhance customer contentment and the evaluation of airport services constitutes the service design in airports. In this context, service design processes provide insights into how businesses can achieve success in their customer experiences. The technique of constructing a service to elevate the customer experience is referred to as service design (Brown & Katz, 2011). Concurrently, the primary objectives of service design are to optimize interactions among customers, stakeholders, and employees, with the overarching goal of value co-creation through the establishment of an experiential process for all stakeholders (Polat & Ambrose, 2022). Accordingly, design-thinking methods and tools are becoming increasingly important. Service design within the airline sector has various aspects, including the development of educational programs utilizing VR content for flight attendants (Park, 2022). Moreover, there is a concentration of innovative novel in-flight cuisine and beverage systems to minimize waste and cater to passenger requests based on service design (Trapani et al., 2022). Further research has indicated that the integration of gamification processes can enhance the participation of new passengers and entice new consumer profiles to an array of service systems (Sesliokuyucu, 2023). Another aspect involves the implementation of variable opaque products to generate additional revenue for airlines. Additionally, modeling frameworks have been employed to support the planning of flight frequency in multi-airport systems (Cattaneo et al., 2022). The redesign of in-flight service processes is based on passengers' perceptions and experiences (Nam et al., 2018). Moreover, service design in the tourism industry has become increasingly important because of the factors affecting tourists' decision-making behavior and businesses' desire to make profits (Ruano & Huang, 2023). Service design can also be used to improve customer satisfaction in tourism by understanding customer needs and data-mining service improvement strategies from tourist-generated online reviews (Zhou & Yao, 2023). Chang and Chiu (2023) have been conducted that proposed a model that incorporates service design to enhance the experiential value of guests in star-rated hotels in Taiwan. This shows that service content and operational processes can be further improved through the integration of service design concepts into customer journey mapping (CJM) and the utilization of the Kano questionnaire. Service design is also suggested as a problem-solving approach for revamping airport passenger experiences, especially in the post-COVID-19 era (Campiranon, 2022). Although studies on airport service design are limited, it is recognized as a crucial issue in the transportation industry.

Customer journey mapping, which uses a tool in the service design process, is an essential tool in user-centered design and delineates each stage of the customer's experience throughout the service process, meticulously outlining touchpoints and corresponding emotional states (Shiratori et al., 2021). The fundamental aim is to obtain a comprehensive comprehension of the complete consumer journey, with a focus on consumer demand and enhancing experiences. By utilizing journey maps in the service design process, businesses can identify areas that present challenges, implement necessary improvements, and streamline the customer experience. Detailed journey maps enable the utilization of intelligent customer experience platforms and capture authentic moments in a customer's journey (Stickdorn et al., 2018). Using the implementation of the

customer journey, organizations acquire valuable insights into customers' perspectives on the service process. Customer journey mapping provides a comprehensive visualization of customer experience and assists organizations in understanding customer needs at various touchpoints. This shared understanding contributes to an overall enhancement of customer experience (Gibbons, 2018). On the other hand, the research wall fulfills distinct yet complementary functions. The research wall, which allows researchers to detect patterns and categorize them based on specific attributes, serves as a tool for data analysis and enables the visualization of pertinent data on a physical platform. This tool incorporates materials obtained from user interviews, observation notes, event stories, and photographs and contributes to the co-creation of value by providing the entire team with access to data for continuous reassessment. It helps the design team internalize customer experiences, identify issues, and devise solutions, thereby stimulating subsequent stages and fostering the exchange of information among team members (Stickdorn et al., 2018).

Value Co-Creation and Customer Satisfaction

A key factor in determining business success is the requirement to ensure customer satisfaction. This necessitates the adoption of various strategies aimed at attracting new customers, satisfying the existing clientele, and fostering loyalty to gain a competitive advantage. Among these approaches, the concept of value co-creation surfaces is extremely efficient. It requires motionless involvement of both internal and external stakeholders in various aspects, such as idea generation and the design process. By embracing this strategy, businesses can prioritize processes that maximize customer engagement in tailoring services, surpassing the mere provision of products or services to offer additional benefits (Vargo & Lusch, 2004). Customer satisfaction, derived from experiences that meet expectations, underscores the significance of businesses in comprehending customer needs, recognizing value, and engaging in value co-creation to provide customer-centric solutions (Payne et al., 2008). Scholarly studies indicate that value co-creation has a major effect on customer satisfaction (Baehagi et al., 2023; Gonzalez-Mansilla et al., 2023; Li, 2023). Research also indicates that behaviors associated with value co-creation, such as customer-employee interaction and digital engagement, exhibit a positive correlation with customer satisfaction (Oh & Shin, 2022). Creating value is an important factor in improving customer satisfaction by promoting positive interactions, engagement, and experiences between customers and businesses. There is a hypothesized scientifically substantial connection between value co-creation and customer satisfaction in this context:

- H1: There is a significant relationship between value co-creation and customer satisfaction.

Service Design and Customer Satisfaction

Service design is inherently centered on the human element. This approach that places humans at the core has the potential to foster creativity to address issues, foster innovation, and enhance the overall experience of the customer. It is important to note that this phenomenon is centered on gaining a deep understanding of and identifying the needs, experiences, and requirements of customers (Polat & Ambrose, 2022). By prioritizing the creation of customer value through innovative problem-solving design thinking utilizes design strategy as a means to support innovation, enhance customer experiences, and develop novel products and services for customers (Maeda, 2016). The integration of quality elements in service design has a substantial effect on availability, usability, functionality, aesthetics, emotional connection, user satisfaction, and customer experience. Furthermore, a scholarly article proposed the adoption of a novel approach

to service design that unifies front-office and back-office operations to increase service speed and efficiency, which in turn raises customer satisfaction (Lee et al., 2021). These findings suggest that different service design approaches can affect customer satisfaction in different ways. In view of this information, H2 was formulated:

- H2: There is a significant relationship between service design and customer satisfaction.

Value Co-Creation and Service Design

Service design represents more than just a novel design methodology; it signifies a paradigm shift away from traditional tangible and visual design towards the intangible realm. Conversely, design-driven experience does not seek to provide a definitive solution to a problem but rather aims to generate a positive contribution within the existing context (Nelson & Stolterman, 2014). It facilitates ongoing engagement with users throughout the design process, fostering experiences of collaborative creation and establishing an environment conducive to the co-creation of value. Value co-creation has a significant influence on the design of services. Value generation is regarded as a precursor to service design and the facilitation of ongoing engagement with users. The examination of the mediating variable in the connection between the emotional mechanics of gamification and service design, which has been the subject of investigation, has demonstrated its capacity to promote interactions with users and establish an environment conducive to value generation (Hussain et al., 2023). The fusion of value generation with user-centered design in the realm of healthcare can yield resources that are co-created, customized, and purpose-fit, thereby enhancing the likelihood of their adoption, usability, sustainability, and ability to generate meaningful outcomes, thereby creating value for all stakeholders (Janamian et al., 2022). According to Xu and Wang (2023) in the online technology industry, the operational mode of value creation increases user service and facilitates the joint development of user value, which leads to increased productivity and economic growth. The process of creating value involves a great deal of contact and encounters, which raises the psychological ownership and value of users and businesses. Therefore, value creation plays a central role in molding service design and enhancing the overall user and company experience:

- H3: There is a significant relationship between value co-creation and service design.

The Mediating Effect of Service Design Between Value Co-Creation and Customer Satisfaction

Service design largely mediates the relationship between value co-creation and customer satisfaction (Gonzalez-Mansilla et al., 2023). Service design may improve user experience and enable the co-production of user value by focusing on the design of the service mode within the online technology industry (Yi et al., 2022). Additionally, the arrangement of services demonstrates the ability to strengthen the relationship between customer interaction and value creation, thereby increasing customer satisfaction (Wahab et al., 2022). In this case, service design, along with customer interaction, has the potential to affect the goal of co-creating customer value, which in turn affects customer satisfaction.

- H4: There is a mediating effect of service design between value co-creation and customer satisfaction.

Methods

This study adopted the service design (six items) scale and value co-creation (seven items) scale developed by Martin-Pena et al., (2023). This research also used Oliver's (1997) customer satisfaction (three items) scale. All the research statements were measured using a five-point Likert scale (1 = *strongly disagree* and 5 = *strongly agree*). This study consists of two stages. The first stage includes an analysis of the CJM and research wall, which are service design tools. Thus, the satisfaction level of the touchpoints on CJM was evaluated. The journey map includes 10 different touchpoints: parking, security, information, ticket sales, check-in, cafeteria, restrooms, mosques, baby care rooms, and passport control. Comments written on post-it notes on the research wall were also analyzed through sentiment analysis; 97 passengers participated in the study, leaving 122 comments on the research wall. In this context, a service design studio was established to measure passenger satisfaction between May 8, 2023, and May 12, 2023, in the boarding area at Isparta Suleyman Demirel Airport. Identifying Isparta Suleyman Demirel Airport as a research area holds great significance due to the extensive refurbishment for *Earthquake Reinforcement Construction Work in Existing Buildings* (DHMI, 2023) the airport underwent subsequent to the research. The primary rationale for conducting scientific research within the realm of service design at the Isparta Suleyman Demirel Airport lies in the potential to enrich and optimize the overall passenger experience. In this context, this study offers a methodical and empirically based method to comprehend the distinct dynamics, challenges, and opportunities within an airport's service design framework. In the second stage, the survey administered to passengers participating in the service design process was analyzed using PLS-SEM. The target population of this study included current passengers who had attended service design applications at airports. By directing its attention to passengers who have undergone service design implementations at the airport, the study guarantees a direct connection to the subject matter. These individuals personally participated in the executed service design initiatives, thereby offering valuable insights into the pragmatic aspects and efficacy of these applications. Essentially, the selection of current passengers who have attended service design initiatives at the Isparta Suleyman Demirel Airport ensures that the study captures the genuine perspectives of those directly affected by these initiatives. Their first encounters serve as a valuable source of data for evaluating the practical consequences of service design, identifying areas for enhancement, and contributing to the continuous improvement of an airport's service quality.

Sample

Passengers who participated in the service design application in the airport's boarding area were asked to complete a survey to gauge their opinions regarding the application. To manage the service design application efficiently, 97 airport participants were contacted and consented to participate in the research. Subsequently, a survey was conducted to determine passengers' perceptions of the service design application. Nevertheless, 23 respondents who had experienced the service design application declined to participate in the survey (see Table 1). This study included a total of 74 participants. The responses provided by passengers regarding experience-oriented service design exhibited variations based on the expectations established by their travel objectives. It has been observed that factors such as age, financial status, and educational background also influence the decision-making process, in addition to travel purposes. Table 1 demonstrates that out of the 74 participating passengers, 59% were male and 39% were female. Within this passenger cohort, 66% were unmarried and the remaining 34% were married.

Passengers within the age range of 20-29 constitute 46%, followed by those within the age range of 30-39 at 26%, with participants hailing from all age groups. Employees in the private sector accounted for 34%, while students represented the majority (24%) of the study participants.

Table 1. Participants Characteristics

Variable	Value	%	Variable	Value	%
<i>Gender</i>	Female	39	<i>Job</i>	Student	26
	Male	59		Private sector	34
	No answer	1		Public servant	18
<i>Age</i>	15-20	5		Housewife	3
	20-29	46		Freelance	9
	30-39	26		Other	9
	40-49	11		No answer	1
	50-59	5	<i>Travel Frequency</i>	Once in a year	9
	60 and above	7		More than twice in a year	50
<i>Marital Status</i>	Married	34		Once month	12
	Single	66		More than twice in a month	18
<i>Education</i>	Primary school	1		Once a week	5
	Highschool	15	<i>Travel Purpose</i>	First experience	1
	Associate degree	7		Other	4
	Bachelor's degree	45		Business	36
	Master's degree	20		Entertainment	12
<i>Household Income</i>	PhD	12		Health	1
	0-10.000₺	24		Family/friends	32
	10,000-15,000₺	7		Sports	1
	15,000-20,000₺	15		Education	12
	20,000-30,000₺	23		Others	4
	30,000₺ or more	28			
	No answer	3			

Upon examining the frequency and objectives of travel among passengers under the specified circumstances, it becomes evident that a majority of 50% utilize the airport for more than two journeys within a year. Moreover, 36% employed the airport for business purposes, whereas 32% used it for family and social visits. The findings reveal that 45% of the passengers are undergraduate travelers, while the subsequent majority (20%) are postgraduate travelers.

Findings

First Phase

In the initial phase of the study, airport passenger satisfaction was assessed through comprehensive CJM and the research wall (Figure 1). The research undertaken at the Isparta Suleyman Demirel Airport determined touchpoints through pre-visit assessments at the airport. Thus, the stand established at Isparta Suleyman Demirel Airport was designed as a journey map of service experiences at the airport for passengers to provide feedback on their personal experiences and how to improve this experience. This mapping exercise, encompassing touchpoints such as parking, security, concierge, ticket sales, check-in, cafeteria, toilets, prayer room, baby care room, and passport control, aims to unveil customer satisfaction in the airport service process. The emotional states of the users at each touchpoint were examined by employing a three-dimensional graphic representation associating the ten identified contact points with five emotional states (very good, good, neutral, bad, and very bad). The study, conducted over five days in the airport boarding area, involved 97 passengers who willingly participated in the research.

Figure 1. Customer Journey Mapping and Research Wall in the Airport



The resultant CJM (Figure 2) revealed nuanced insights into passengers' emotional states at different touchpoints, indicating varying intensity levels across profiles. Notably, the graphic delineated that security and check-in evoked the most intense, very good mood, while the cafeteria yielded the most intense, very bad mood.

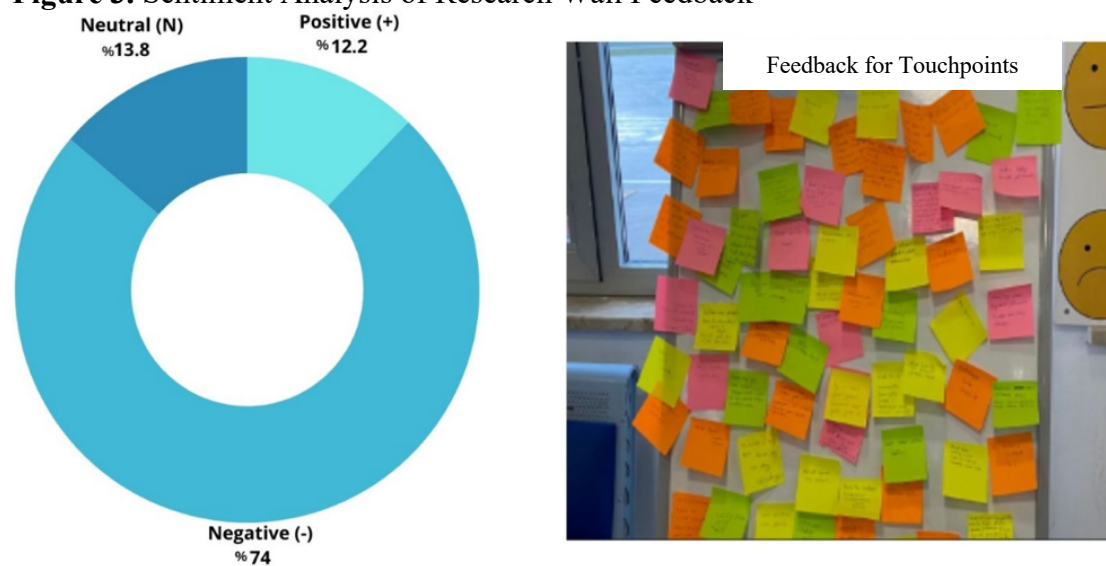
Figure 2. Customer Journey Mapping



When examining the findings displayed on the study's CJM, it is evident that the majority of passengers, amounting to 45.59%, hold a *neutral* perspective regarding the parking touchpoint in

the airport. In terms of security touchpoints, the majority of passengers opted for the *good* alternative, representing a rate of 50.44%. Upon analyzing the information desk touchpoint, it is notable that a significant proportion of passengers (43.65 %) selected the *neutral* choice. When shifting attention to the check-in touchpoint, it is apparent that, unlike the other areas, the majority of passengers have favored the *very good* option, totaling 32.01%. As for the least favored option concerning the check-in point, passengers have shown a preference for the *bad* alternative, with a rate of 2.91%. Within the cafeteria, another area visited by passengers, it is observed that a considerable proportion of passengers, amounting to 26.19%, opt for the *bad* option, while 12.61% select the *very bad* choice. Regarding restroom touchpoints, the most preferred option among passengers is the *neutral* alternative, representing 30.07% of respondents. Upon analyzing the baby care room, it is observed that the emotional state most commonly chosen by passengers is *neutral*, with a rate of 89.24%, while the least preferred emotional state option is *very bad*, which has a rate of 0%. Finally, when considering the passport control point, the most favored emotional state among passengers is the *neutral* alternative, with a rate of 65.96%. Concurrently, the research wall, a platform where users detailed their thoughts on airport touchpoints using colored posts, facilitated a more granular understanding of passenger feedback. A total of 122 comments were collected from 97 participants. Comments, measured via sentiment analysis, were further categorized as positive, neutral, or negative. Passenger perspectives about the touchpoints in the airport interaction were manually classified into positive, negative, and neutral sentiments based on 122 datasets conveyed through post-it notes. The resulting sentiments and research walls are shown in Figure 3.

Figure 3. Sentiment Analysis of Research Wall Feedback



The analysis demonstrated that the comments comprised 74% negative, 12.2% positive, and 13.8% neutral sentiments. The main themes emerging from passengers' airport experience include security checks, service quality, facility amenities, and overall evaluation. Most negative sentiments articulated by passengers are associated with the cafeteria. Passenger criticisms encompass issues such as the limited variety of cafeteria products, lack of visibility in the cafeteria section, and elevated prices of cafeteria items, among others. On the other hand, the security touchpoint is where passengers predominantly express positive sentiments. Passengers manifest contentment with the adequacy of security measures and the professionalism of security personnel

in their remarks about the security touchpoint. However, many passengers perceive security measures, such as identity and baggage checks, as excessive, and they express dissatisfaction with the length and narrowness of the check-in process. The information desk is positively evaluated within the realm of services; however, there are various criticisms regarding cafeteria prices, communication, and restroom cleanliness. Passengers noted inadequacies in waiting areas and facility amenities while concerning transportation and general issues and complained about the distance from the city, transportation costs, and the number of flights. Passenger recommendations and criticisms underscore the need for improvements in various airport aspects. Touchpoints where passengers predominantly opt for the neutral option are typically locations where passengers do not feel compelled to express their preference.

Second Phase

In the subsequent phase, the study focused on current passengers who participated in airport service design applications. A total of 97 passengers at the airport provided feedback to the service design application, which included CJM and research wall tools. After the application, a survey was requested to be administered to these passengers to measure their perception of the application. However, only 74 participants wanted to participate in the survey. Consequently, 74 participants were included in this stage of the study. A G*Power analysis was performed to determine if the sample size was adequate to support the research hypothesis (Faul et al., 2007). The G*Power analysis results indicate that, in terms of visual importance, the study has 80% power to detect minor effects ($d = .1$) at a significance level of 5%. Therefore, the findings of the G*Power analysis demonstrated that the study's sample size was sufficient for testing the hypotheses. PLS-SEM is important for small sample sizes in research because it allows for effective analysis even with limited data. PLS-SEM is commonly used in marketing research because it handles small sample sizes and provides more accurate results than other methods (Ali et al., 2018).

Initially, the measurement model underwent an assessment for convergent validity, employing factor loadings, composite reliability (CR), and average variance extracted (AVE), following the methodology outlined by Hair et al., (2013). Table 2 presents the factor loadings, and it is noteworthy that, with a few exceptions, all item loadings surpassed the recommended threshold of .7 (Hair et al., 2013). Despite these exceptions, the decision was made to retain these items based on the satisfactory values observed for both CR and AVE. The CR values, indicating the extent to which the construct indicators reflect the latent construct, exceeded the recommended threshold of .7 (Hair et al., 2013). Additionally, the AVE, representing the overall variance accounted for by the latent construct, surpassed the recommended threshold of .5 (Hair et al., 2013). The utilization of the Fornell-Locker criterion (Henseler et al., 2016) is justified by the proposition that discriminant validity can be established when a latent variable exhibits greater variance than the indicator variables it shares with other structures within the same model (Fornell & Larcker, 1981). Henseler et al. (2016) proposed a method known as the Heterotrait-Monotrait ratio of correlations (HTMT). As indicated by Henseler et al. (2016), the HTMT ratios of the structures were below the specified cutoff value of .85.

Table 2. Validity and Reliability for constructs

Variable	Loading	α	CR	AVE
<i>Value Co-Creation</i>		.892	.915	.608
Through the service design application, the airport actively promotes a dialogue with customers to learn more about their needs.	.788			
Through the service design application, the airport actively promotes a dialogue with customers to learn more about what they want, and how they want it.	.847			
The service design application enables the exchange of ideas with other users.	.661			
The service design application gives users a range of options to decide how to live the airport experience.	.756			
The service design application provides access to privileged information about new products or airport events.	.800			
The service design application gives customers information about the products and services linked to the airport experience.	.821			
The service design application allows you to evaluate all the positive and negative factors associated with the airport experience.	.770			
<i>Service Design</i>		.894	.920	.662
The airport and I are in contact to design my airport experience together.	.601			
Through the service design application, I feel free to express my ideas and opinions.	.836			
The service design application lets me feel like I'm part of a community.	.901			
I feel like I participate in the design of the service.	.876			
The service design application makes me feel like I'm part of the company.	.815			
The functions of the service design application in the airport are well integrated.	.817			
<i>Customer Satisfaction</i>		.948	.967	.906
Overall, I am satisfied with my design-focused experience at this airport.	.927			
I am pleased to use the design-focused experience offered at this airport.	.972			
I have really enjoyed the design-focused experience at this airport.	.957			

Customer satisfaction is not directly impacted by service design ($H2; \beta = .445; t = 1.467$) or value co-creation ($H1; \beta = .343; t = 1.224$), according to the results of the hypothesis testing (Table 3). However, the findings validate the third hypothesis ($H3$), according to which value co-creation has a significant and positive impact on service design ($\beta = .805^{***}; t = 12.871$). Mediation analysis ($H4$) did not verify that service design is significant in mediating the relationship between value co-creation and customer satisfaction ($\beta = .359; t = 1.441$).

Table 3. Fornell–Larcker Criterion and Heterotrait-Monotrait Ratio Analysis

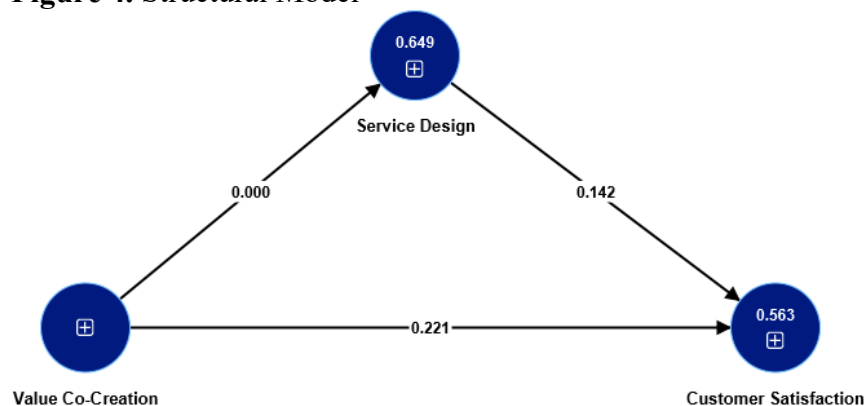
Variable	Value Co-Creation	Service Design	Customer Satisfaction
Value Co-Creation	.780		
Service Design	.772 (.858)	.813	
Customer Satisfaction	.647 (.690)	.722 (.770)	.952

Table 4 presents the comprehensive results of the structural model (see Figure 4) and hypothesis testing. The analytical discoveries demonstrate a statistically significant and positive influence of perceptions of value co-creation on service design. This result confirms the acceptance of the proposed hypothesis. However, a nuanced examination of the data suggests that customer satisfaction does not display a direct and significant correlation with service design and value co-creation. Moreover, the mediation analysis conducted to investigate the potential mediating role of service design in the association between value co-creation and customer satisfaction did not yield statistically significant results. This interesting outcome encourages further investigation and consideration of the potential factors or contextual nuances that may contribute to the observed findings.

Table 4. Direct and Indirect Effects and Hypothesis Tests

Hypothesis	β	t	p	Result
Value Co-Creation > Customer Satisfaction	.343	1.224	.221	Not supported
Service Design > Customer Satisfaction	.445	1.467	.142	Not supported
Value Co-Creation > Service Design	.805	12.871	.000	Supported
Value Co-Creation > Service Design > Customer Satisfaction	.359	1.441	.150	Not supported

Note. $***p < .001$, $**p < .05$

Figure 4. Structural Model

Conclusion

In the business realm, customer satisfaction serves as a fundamental principle for both economic viability and competitive advantage, thereby compelling organizations to employ innovative approaches. Service design, renowned for its focus on human-centeredness and interdisciplinary methods, has gained significant prominence in enhancing customer experiences and promoting a comprehensive understanding of customer needs. Using service design, organizations may not only improve customer satisfaction but also acquire a competitive edge by encouraging innovation and collaboration. Therefore, this study aims to explore the effect of the co-creation of value, experiences driven by design, and customer satisfaction within the aviation sector. This study makes a noteworthy contribution to the ongoing discourse on the applicability of service design in the aviation industry, shedding light on its potential to rethink the dynamics of customer satisfaction. The initial phase of this investigation employed CJM and the research wall as tools for identifying distinct emotional patterns at different touchpoints, thereby indicating potential service improvements. The emotional states of passengers at different touchpoints were analyzed, revealing nuanced insights into their experiences. The findings indicated varying intensity levels across touchpoints, with security and check-in evoking the most positive emotions, while the cafeteria predominantly received negative feedback. The research wall provided a platform for passengers to express their sentiments, with a majority of comments reflecting negative feedback, particularly in the cafeteria area. Using CJM and the research wall in this study provides concrete insights for airport management to strategically enhance operational aspects. By continuously reassessing feedback, patterns, and areas for improvement, proactive identification can be achieved, ensuring that operational adjustments align with actual passenger experiences. This study promotes value co-creation by encouraging collaboration among stakeholders, including passengers, and airport management. The research wall, which functions as a platform for passenger feedback, fosters a collaborative environment for innovative solutions. By involving passengers in the innovation process, service improvements that align with their expectations contribute.

In the subsequent phase, the outcomes of hypothesis testing conducted in this investigation yield a detailed understanding of the relationship between service design, value co-creation, and customer satisfaction. The results indicate that value co-creation (H1) and service design (H2) do not directly affect customer satisfaction. This deviation from established beliefs highlights the importance of a more comprehensive understanding of the elements contributing to customer

satisfaction in service-oriented settings. However, this analysis attracts attention to the significance of the link between value co-creation and service design. The validation of the third hypothesis (H3), which posits a significant and positive influence of value co-creation on service design, supports the findings of an increasing number of scholarly works that emphasize the independent nature of these two concepts. This finding, derived from the investigation, aligns with the research findings of Martin-Pena et al. (2023), which contribute towards a more comprehensive understanding of the role of emotional mechanics in gamification on service design by employing the value creation perspective. Mediation analysis (H4) did not support the hypothesis that service design plays a major mediating role in the relationship between value co-creation and customer satisfaction. This discovery presents a challenge to prior assumptions regarding the intermediate function of service design in augmenting customer satisfaction through value co-creation. Further investigation in future research could delve deeper into the intricacies of this relationship, exploring potential factors that moderate or contextual nuances that may influence the mediation process. This study reaffirms the theoretical importance of service design principles in the aviation industry and sheds light on the iterative nature of service design procedures. It emphasizes the theoretical basis of these principles in optimizing customer experiences and presents a conceptual framework for enhancing customer satisfaction in dynamic settings. By contributing to the theoretical comprehension of value co-creation, this study exemplifies its practical consequences in aviation by accentuating the collaborative endeavors of both internal and external participants in customizing services and offering additional benefits to passengers.

This study recommends continuous reassessment of feedback, patterns, and areas for enhancement to ensure that operational adjustments align with genuine passenger experiences. Airport management should strategically use CJM and research walls to identify emotional patterns at different touchpoints, with a particular focus on areas of improvement. Involving passengers in the innovation process fosters a collaborative environment and contributes to service improvements that align with passenger expectations. This study reaffirms the theoretical importance of service design principles in the aviation industry and presents a conceptual framework for enhancing customer satisfaction in dynamic settings. The validation of the significant and positive influence of value co-creation on service design aligns with evolving scholarly perspectives and highlights the importance of these two elements. The non-supportive mediation analysis of the role of service design in mediating the relationship between value co-creation and customer satisfaction prompts further theoretical exploration. Future research could delve deeper into potential moderating factors or contextual nuances that influence the mediation process.

References

- Ajmal, M. M., Jan, A., Khan, M., Hussain, M., & Salameh, A. A. (2023). Exploring the barriers and motivators of value co-creation through a theoretical lens of service-dominant logic. *Journal of Business & Industrial Marketing*. Advance online publication. <https://doi.org/10.1108/JBIM-08-2021-0366>
- Ali, F., Rasoolimanesh, S. M., Sarstedt, M., Ringle, C. M., & Ryu, K. (2018). An assessment of the use of partial least squares structural equation modeling (PLS-SEM) in hospitality research. *International Journal of Contemporary Hospitality Management*, 30(1), 514-538. <https://doi.org/10.1108/IJCHM-10-2016-0568>
- Baehagi, M., Cahyono, R. S., & Riptiono, S. (2023). Determining value co-creation behaviour toward customer loyalty and customer retention on the SRC's business platform. *Matrik: Jurnal Manajemen, Strategi Bisnis dan Kewirausahaan*, 17(1), 48-60. <https://doi.org/10.24843/MATRIK:JMBK.2023.v17.i01.p04>
- Bouchriha, Z., Farid, S., & Ouiddad, S. (2023). Enhancing value co-creation behaviors through customer engagement in the Moroccan hotel context: How does it influence customer satisfaction and brand image? *Journal of Quality Assurance in Hospitality & Tourism*. Advance online publication. <https://doi.org/10.1080/1528008X.2023.2165595>

- Brown, T., & Katz, B. (2011). Change by design. *Journal of Product Innovation Management*, 28(3), 381-383. <https://doi.org/10.1111/j.1540-5885.2011.00806.x>
- Campiranon, K. (2022). Airport design thinking: An employee perspective. In N. S. W. Wijaya, N. K. Widiartini, & M. R. P. Kusyanda (Eds.), *IJCHT 2022: Proceedings of the 2nd international joint conference on hospitality and tourism* (pp. 99-110). European Alliance for Innovation. <http://doi.org/10.4108/eai.6-10-2022.2325697>
- Cattaneo, M., Birolini, S., Malighetti, P., & Paleari, S. (2022). A grid-based evolutionary spatial algorithm for airline service design in multi-airport systems. *Transportation Research Procedia*, 62, 416-423. <https://doi.org/10.1016/j.trpro.2022.02.052>
- Chang, T. Y., & Chiu, Y. C. (2023). Exploiting service design in service quality: Escorting the customer's experiential value in the journey of a star-rated hotel. *Systems*, 11(4), 1-21. <https://doi.org/10.3390/systems11040206>
- DHMI. (2023, January 5). *Bina onarımı yaptırılacaktır* [Building renovation will be applied] [Press release]. <https://www.dhmi.gov.tr/Lists/Ihalelanlari/Attachments/1533/%C4%B0LAN.pdf>
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175-191. <https://doi.org/10.3758/bf03193146>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50. <https://doi.org/10.2307/3151312>
- Gallarza, M., Gil-Saura, I., & Arteaga-Moreno, F. (2023). Bridging service dominant logic and the concept of customer value through higher order indexes: Insights from hospitality experiences. *European Journal of Tourism Research*, 35, 1-23. <https://doi.org/10.54055/ejtr.v35i.3104>
- Gibbons, S. (2018, December 9). *Journey mapping 101*. Nielsen Norman Group. <https://www.nngroup.com/articles/journey-mapping-101/>
- Gonzalez-Mansilla, O. L., Serra-Cantalops, A., & Berenguer-Contrí, G. (2023). Effect of value co-creation on customer satisfaction: The mediating role of brand equity. *Journal of Hospitality Marketing & Management*, 32(2), 242-263. <https://doi.org/10.1080/19368623.2023.2164394>
- Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2013). *A primer on partial least squares structural equation modelling (PLS-SEM)*. Sage.
- Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modeling in new technology research: Updated guidelines. *Industrial Management & Data Systems*, 116(1), 2-20. <https://doi.org/10.1108/IMDS-09-2015-0382>
- Hussain, A., Abid, M. F., Shamim, A., Ting, D. H., & Toha, M. A. (2023). Videogames-as-a-service: How does in-game value co-creation enhance premium gaming co-creation experience for players? *Journal of Retailing and Consumer Services*, 70, Article 103128. <https://doi.org/10.1016/j.jretconser.2022.103128>
- Janamian, T., True, A., Dawda, P., Wentzel, M., & Fraser, T. (2022). Co-creating education and training programs that build workforce capacity to support the implementation of integrated health care initiatives. *The Medical Journal of Australia*, 216(10), 9-13. <https://doi.org/10.5694/mja2.51526>
- Kim, S. Y., Kim, T. H., Kim, Y. S., & Park, M. S. (2022). A study on airport service improvement using service design process. In R. Lee (Ed.), *Computer and information science 2021 – Fall* (Vol. 1003, pp. 75-85). Springer. https://doi.org/10.1007/978-3-030-90528-6_7
- Lee, S., Oh, H. Y., & Choi, J. (2021). Service design management and organizational innovation performance. *Sustainability*, 13(1), Article 4. <https://doi.org/10.3390/SU13010004>
- Li, M. (2023). Co-creating value between retail consumers and retailers. *International Journal of Multidisciplinary Research and Growth Evaluation*, 4(3), 108-110. <https://doi.org/10.54660/ijmrge.2023.4.3.108-110>
- Maeda, J. (2016, March 14). *Design in tech report*. Kleiner Perkins Caulfield & Byers. https://designintech.report/wp-content/uploads/2018/11/designintech2016_small.pdf
- Martin-Pena, M. L., Garcia-Magro, C., & Sanchez-Lopez, J. M. (2023). Service design through the emotional mechanics of gamification and value co-creation: A user experience analysis. *Behaviour & Information Technology*, 43(3), 486-506. <https://doi.org/10.1080/0144929x.2023.2177823>
- Musriha, M. (2018). Pengaruh servicescape dan kualitas komunikasi karyawan terhadap loyalitas nasabah melalui kepuasan nasabah Bank Mandiri di Surabaya [The effect of service scape and employee communication quality on customer loyalty through Bank Mandiri customer satisfaction in Surabaya]. *Jurnal Ekonomi dan Keuangan*, 15(2), 247-268. <https://doi.org/10.24034/j25485024.y2011.v15.i2.273>
- Nam, S., Ha, C., & Lee, H. C. (2018). Redesigning in-flight service with service blueprint based on text analysis. *Sustainability*, 10(12), Article 4492. <https://doi.org/10.3390/su10124492>
- Nelson, H. G., & Stolterman, E. (2014). *The design way: Intentional change in an unpredictable world* (2nd ed.). MIT. <https://doi.org/10.7551/mitpress/9188.001.0001>
- Oh, M. O., & Shin, J. K. (2022). Effects of customer value co-creation behavior on customer experience and customer loyalty. *Journal of the Korean Data Analysis Society*, 24(5), 1745-1762. <https://doi.org/10.37727/jkdas.2022.24.5.1745>
- Oliver, R. L. (1997). *Satisfaction: A behavioral perspective on the consumer*. McGraw-Hill.

- Park, H. A. (2022). A study on the design of aviation cabin service teaching-learning model using VR content. *Korean Association for Learner-Centered Curriculum and Instruction*, 22(21), 45-62. <https://doi.org/10.22251/jlcci.2022.22.21.45>
- Payne, A., Storbacka, K., & Frow, P. (2008). Managing the co-creation of value. *Journal of the Academy of Marketing Science*, 36(1), 83-96. <https://doi.org/10.1007/s11747-007-0070-0>
- Polat, I. (2021). Value co-creation and passenger loyalty in the context of the DART model: The mediating role of perceived service newness. *Journal of Aviation*, 5(2), 219-229. <https://doi.org/10.30518/jav.1001127>
- Polat, I., & Ambrose, S. C. (2022). Havacılıkta deneyimsel süreçlerde tasarım odaklı düşünme [Design-oriented thinking in experiential processes in aviation]. In I. Polat (Ed.), *Havacılıkta yenilik süreçleri ve deneyimsel uygulamalar* [Experiential applications in the social innovation process in aviation] (pp. 157-199). Paradigma Akademi.
- Ruano, M., & Huang, C. Y. (2023). A novel approach to service design within the tourism industry: Creating a travel package with AHP-TRIZ integration. *Systems*, 11(4), Article 178. <https://doi.org/10.3390/systems11040178>
- Sak, F. S., Atalık, O., & Kumtepe, E. G. (2022). The phenomenon of value co-creation and its place in air transport. In N. Gustavo, J. Pronto, L. Carvalho, & M. Belo (Eds.), *Optimizing digital solutions for hyper-personalization in tourism and hospitality* (pp. 154-172). IGI Global. <https://doi.org/10.4018/978-1-7998-8306-7.ch008>
- Sesliokuyucu, O. S. (2023). Is gamification important for service systems non-users? A study on airline loyalty programs. *Journal of Aviation*, 7(1), 123-132. <https://doi.org/10.30518/jav.1239127>
- Shiratori, E. K. A., Trevisan, A. H., & Mascarenhas, J. (2021). The customer journey in a product-service system business model. *Procedia CIRP*, 100, 313-318. <https://doi.org/10.1016/j.procir.2021.05.072>
- Stickdorn, M., Hormess, M. E., Lawrence, A., & Schneider, J. (2018). *This is service design doing: Applying service design thinking in the real world*. O'Reilly.
- Sun, W. L., Hwang, H., & Hong, J. H. (2020). Effect of consumption value of restaurant service on consumer satisfaction: Focusing on consumer experiences at a Chinese franchise restaurant. *Human Ecology Research*, 58(2), 177-186. <https://doi.org/10.6115/fer.2020.013>
- Trapani, P. M., Mo, J., & Ma, K. (2022). A product-service system design approach for the frame innovation of food and beverage on board of civil aviation aircraft. In D. Lockton, S. Lenzi, P. Hekkert, A. Oak, J. Sádaba, & P. Lloyd (Eds.), *Design research society conferences* (pp. 1-24). DSR. <https://doi.org/10.21606/drs.2022.751>
- Vargo, S. L., & Lusch, R. F. (2004). Evolving to a new dominant logic for marketing. *Journal of Marketing*, 68(1), 1-17. <https://doi.org/10.1509/jmkg.68.1.1.24036>
- Venkatakrishnan, J., Alagiriswamy, R., & Parayitam, S. (2023). Web design and trust as moderators in the relationship between e-service quality, customer satisfaction and customer loyalty. *The Total Quality Management Journal*, 35(8), 2455-2484. <https://doi.org/10.1108/tqm-10-2022-0298>
- Wahab, H. K., Tao, M., Alam, F., & Ocloo, E. C. (2022). Impact of value co-creation on customer loyalty: The role of trust and satisfaction. *International Journal of E-Business Research*, 18(1), 1-20. <http://doi.org/10.4018/IJEER.309390>
- Wenninger, A., Rau, D., & Röglinger, M. (2022). Improving customer satisfaction in proactive service design. *Electronic Markets*, 32, 1399-1418. <https://doi.org/10.1007/s12525-022-00565-9>
- Xu, W., & Wang, Y. (2023). The value co-creation service mode design of online technology market. In F. Rebelo, & Z. Wang (Eds.), *Ergonomics in design* (pp. 439-449). AHFE Internationals. <https://doi.org/10.54941/ahfe1003402>
- Yi, X., Haq, J. U., & Ahmed, S. (2022). Impact of customer participation in value co-creation on customer wellbeing: A moderating role of service climate. *Frontiers in Psychology*, 13, Article 877083. <https://doi.org/10.3389/fpsyg.2022.877083>
- Zhou, K., & Yao, Z. (2023). Analysis of customer satisfaction in tourism services based on the Kano model. *Systems*, 11(7), Article 345. <https://doi.org/10.3390/systems11070345>