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The Effect of Aviation Industry's Service Quality on Passenger Satisfaction and WOM Communication during the COVID-19 Pandemic*

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Abstract: *This study aims to reveal the factors affecting airline passengers' perceptions of airline and airport service quality during the COVID-19 pandemic and their impact on passenger satisfaction and word-of-mouth communication. The research data was collected throughout Türkiye and analysed using PLS-SEM. As a result, it was found that passengers' perceptions of service quality of airline physical elements, airline and airport general elements, and airport physical elements had a significant and positive effect on their perceptions of airline and airport general service quality during the COVID-19 pandemic. In addition, significant and positive effects of airline general service quality and airport general service quality perceptions on passenger satisfaction and word-of-mouth communication were also found. It was found that the dimension with the highest impact on passenger satisfaction is the perception of airline general service quality. Similarly, airline general service quality perception has a higher effect on word-of-mouth communication than airport general service quality perception. In addition to contributing to the theoretical literature, the research also has important results regarding service marketing strategies that airport and airline businesses can follow during pandemic periods.*

Keywords: Airline Passenger Transportation, Service Quality, Passenger Satisfaction, Word of Mouth Communication, COVID-19 Pandemic

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1. Introduction

COVID-19 was reported to the WHO (World Health Organization) as a "pneumonia of unknown cause" in Wuhan, China, on 31 December 2019. The disease spread rapidly and uncontrollably across the globe, leading to the declaration of a global public health emergency on 30 January 2020. Later, on 11 March 2020, it was officially classified as a pandemic (WHO Media Briefing, 2020; WHO Timeline, 2019). The pandemic, which has progressed rapidly worldwide, has forced many countries to take strict measures, especially in the tourism and transportation sectors, such as the suspension of international and regional travel, domestic tourism, daily visits, and restrictions on air transportation (Gössling et al., 2020). Despite the measures taken against the spread of the pandemic, people's concern about air transport, restrictions and bans on air transport caused a decrease in the demand for this type of transport during the COVID-19 pandemic (Akça, 2020).

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The capability of air transportation to offer rapid connectivity to numerous global destinations has been a critical factor in the swift dissemination of the COVID-19 pandemic. For this reason, air transport became more prominent than other types of transportation during the pandemic, and the subsequent process significantly impacted air transport (Akça, 2020). As a result of the widespread use of vaccines and the gradual relaxation of the measures taken, the increase in air transportation revenues started to emerge in 2021. According to Airports Council International (ACI) statistics, passenger traffic at airports worldwide decreased by 12% in the first quarter of 2020, below the expected level. According to IATA air passenger transportation data, although the recovery in passenger traffic slowed down in 2021 due to international travel restrictions, consumer confidence recovered after the quarantine period in 2020 after the worst period ever recorded for the airline industry (International Air Transport Association December Economic Performance Report, 2019; International Air Transport Association October Economic Performance Report, 2021).

In Türkiye with the pandemic under control, a process called the "new normal" began, and the measures implemented worldwide were gradually reduced as of May 2020. With the decline in the number of deaths and cases in Türkiye efforts were initiated to gradually reduce restrictions on the pandemic in May, June and July 2020 (Presidency of the Republic of Türkiye - E-News, 2020; Turkish Ministry of Health - E-News, 2020). Flight operations in Türkiye, which were suspended as part of the measures taken, were resumed on domestic and international routes in June 2020 (DHMI, 2020a; 2020b). According to the air passenger traffic statistics published by DHMI (General Directorate of State Airports Authority, Türkiye), there was a 51.7% decrease in domestic passengers and a 69.5% decrease in international passengers between February 2019 and February 2020 (DHMI Türkiye Air Passenger Traffic Statistics December, 2020; DHMI Türkiye Air Passenger Traffic Statistics March, 2019; DHMI Türkiye Air Passenger Traffic Statistics October, 2020). When comparing March of the same years it is seen that the decline continues, but the percentage decreases in both domestic and international flights. Considering that COVID-19 cases first started to be seen in Türkiye in March 2020 and Turkish airspace was closed to international flights on March 27, 2020 (SHGM-Directorate General Civil Aviation, NOTAM, dated March 27, 2020), it is possible to attribute the decrease in February comparative flight rates to flight bans and flight avoidance behaviors of airline passengers. Also, there was a 50.2% decrease in domestic passengers and a 70.6% decrease in international passengers between December 2019 (COVID-19 was reported to the WHO) and December 2020. Between October 2020 and 2021, domestic flights increased by 33.8% and international flights by 78.6%. This increase can be explained by the resumption of domestic and international flights in Türkiye in June 2020 as part of normalization measures and the introduction and widespread use of COVID-19 vaccines in Türkiye as of January 2021 (DHMI, 2020a; 2020b; Turkish Ministry of Health - E-News, 2021) leading to a positive impact on airline passenger behavior in the use of domestic and international flights. While the number of international passengers in Türkiye increased by 87.2% between December 2020 and December 2021, domestic passengers increased by only 38.1% compared to December of the previous year (DHMI, December 2020; 2021). This situation indicates that the perception of COVID-19 risk among people living in Türkiye is higher for domestic than international passengers. Therefore, it is important to know these risk perceptions to understand and manage the evaluations regarding the measures taken by airline companies against COVID-19.

Ensuring service quality and customer satisfaction is crucial for business success for businesses operating in the service sector (Parasuraman et al., 1988). This indicates that it is essential to measure service quality (Kozak & Aydın, 2018). Compared to normal periods, during the COVID-19 pandemic, customers' perceptions of service quality changed over time due to the risks brought by the current process. Since May of 2020, following the relaxation of pandemic-related restrictions in Türkiye and many other countries, it is observed that although there has been a move towards normalization, some lifestyle changes have become permanent (Myftiu et al., 2024). However, it should be noted that COVID-19 and its variants (Looi, 2023; Yang et al., 2024) are still present in our lives. Individuals' reactions to COVID-19 and its consequences are closely related to how they perceive COVID-19 (Cho et al., 2022). To maintain positive relations with airline passengers in such periods and afterwards, learning the answers to the questions of which factors shape the service quality perceptions of passengers and how to meet their expectations is one of the most critical issues to be addressed for airline businesses. Since air transportation constitutes a chain of services where

passengers' service quality expectations may vary at different stages of the service (Wafik et al., 2017), it is essential to evaluate passengers' attitudes towards service quality on the ground and during the flight process separately. Also, passengers' opinions about service quality can be influenced by the opinions of others around them.

During the COVID-19 pandemic, numerous studies in the literature have examined various aspects of the measures taken during the pandemic, passenger attitudes, and the situation of the sector after the pandemic (Czerny et al., 2020; Dube et al., 2021; Eroğlu, 2020; Graham et al., 2020; Iacus et al., 2020; Lamb et al., 2020; Linden, 2021; Mhalla, 2020). However, when this research was conducted, few studies were found that specifically addressed the impact of service quality in air transportation on passenger satisfaction and WOM communication during the pandemic. A review of the relevant literature reveals a limited number of studies examining the impact of service quality on passenger satisfaction in airlines (Aqsha et al., 2021), the effect of customer trust on customer satisfaction and WOM communication in airline passengers (Chakraborty et al., 2021), the effect of perceived value, airline loyalty programs and service quality on passengers' WOM communication (Pappachan, 2021). Investigating the impact of service quality on passenger satisfaction and WOM communication in air transportation during the COVID-19 pandemic is important for its contributions to the marketing literature and the benefits it can provide to airline companies. Studies conducted before the COVID-19 pandemic indicate that airline service quality is influenced by different factors examined under the dimensions of service quality. All these factors are important in providing quality service to passengers and are decisive in ensuring passenger satisfaction and WOM communication. One of the significant adverse effects of the pandemic on the airline industry has been the serious decrease in the number of passengers and demand. It is believed that the ability of airline companies to anticipate passenger expectations regarding service quality and take appropriate measures will not only enable faster recovery during potential future pandemics but also allow these companies to gain satisfied and loyal passengers. Based on the gaps in the literature this study aims to identify the factors influencing airline passengers' perceptions of airline and airport service quality during the COVID-19 pandemic, examine how these factors impact passenger satisfaction, and assess the effect of passenger satisfaction on WOM communication. In this study, service quality perception of airline physical elements, service quality perception of airline and airport general elements and service quality perception of airport physical elements are considered as reflective variables. The effects of these variables on the formative latent variables of airline general service quality perception and airport general service quality perception are examined with the structural equation modeling analysis. Considering the characteristics of the COVID-19 pandemic, physical service quality perceptions are expressed as passengers' perceptions of airline physical elements, passengers' perceptions of airport physical elements, and passengers' perceptions of airline and airport general elements. Passengers' perceptions of airline physical elements include passengers' evaluation of the service they encounter in the airplane based on physical elements. Passengers' perceptions of airport physical elements include passengers' assessment of the physical elements related to the airport before boarding and after disembarking from the airplane. Passengers' perceptions of airline and airport general elements refer to the physical elements related to both parties. In addition, the statements related to the other dimensions of the service quality scales were expressed in two dimensions: service quality perception of airline general elements and service quality perception of airport general elements, taking into account the characteristics of the COVID-19 pandemic. Then, the effects of airline general service quality perception and airport general service quality perception on passenger satisfaction and word-of-mouth communication, and finally the effects of passenger satisfaction on word-of-mouth communication are determined. These features show the originality of the study and its contribution to literature. Also, it is aimed to contribute to airline companies by providing suggestions for them to achieve service quality, passenger satisfaction, and WOM communication in pandemic periods or in potential pandemics that may occur in the future. In addition, it is aimed to fill the gap on this subject in Turkish literature as well as in foreign literature.

In the following section, the literature review is given, hypotheses are developed, and a research model is proposed. The methodology is given in the third section. The analysis results are presented in the fourth section. In the concluding section of the study, the findings are discussed from theoretical and practical perspectives, and recommendations are presented for future researchers who will work on this topic.

2. Literature Review and Hypotheses Development

Passengers who use airline transport tend to prefer businesses that offer better service to them (Al-Medabesh et al., 2014; Wafik et al., 2017). Customers who are satisfied with the services provided by an organization are likely to maintain their relations with that organization and engage in word-of-mouth communication (Zeithaml et al., 1996). Many studies show that word-of-mouth communication affects customer behavior (Harrison-Walker, 2001; Nadiri et al., 2008; Suki, 2014). Therefore, it is possible to state that word-of-mouth communication is a very effective tool both in gaining new customers (Harrison-Walker, 2001; Mangold et al., 1999; Murray, 1991) and increasing the business's revenues and market share (Suki, 2014).

Success in the airline industry is based on efforts to understand, meet, and exceed passenger expectations and demands. Therefore, reliably measuring and evaluating service quality is essential (Ekiz et al., 2006; Okumuş & Asil, 2007b). Since service fulfilment involves a process, it is essential to evaluate passengers' attitudes towards service quality separately on the ground and during the flight process. Passenger satisfaction has a significant effect on various behavioural intentions and willingness to recommend an airline company (Eshaghi et al., 2024). Effective WOM communication can speed up sales and provide various benefits (Bayti & Wulandari, 2024). Also, customers' opinions about service quality can be influenced by the opinions of others around them. Therefore, WOM communication plays a crucial role in retaining existing customers and acquiring new ones (Macintosh, 2007; Zeithaml et al., 1996).

Recent studies based on the pandemic (Cruz-Cárdenas et al., 2021; Di Crosta et al., 2021; Hesham et al., 2021; Mehta et al., 2020; Sayyida et al., 2021; Sheth, 2020; Zwanka & Buff, 2021) reveal the impact of the pandemic on passenger behavior. During the pandemic period, the number of studies (Bulchand-Gidumal & Melián-González, 2021; Garg et al., 2021; Sulu et al., 2021; Wang et al., 2022) on passenger behaviour in the airline sector has also increased in the last few years. For example, Bulchand-Gidumal and Melian Gonzales (2021) examined the behavioural change in airline ticket expenditures of passengers after COVID-19, Garg et al. (2021) examined the travel and purchasing behavior of airline passengers during COVID-19, Sulu et al. (2021) examined passenger satisfaction and the factors affecting passenger satisfaction during COVID-19, Wang et al. (2022) examined the factors affecting passengers' intention to recommend airline companies to others during COVID-19.

2.1. Relationships Between Service Quality Perceptions of Airline Physical Elements and General Service Quality Perceptions of Airline and Airport

Airline physical elements dimension includes the airline employees' awareness of their duties (Ekiz et al., 2006; Nadiri et al., 2008), the presentation of food and beverages on the plane complies with hygiene conditions, and the cleanliness and hygiene of the plane's common areas. Although the use of these airline-related features by the passenger is short-term and infrequent, it is stated that they impact the level of passenger satisfaction (Suki, 2014). Physical elements providing tangible cues about airline service quality are widely recognized as a significant dimension of service quality in the airline industry, as highlighted in numerous studies (Farooq et al., 2018; Park et al., 2020; Tsaur et al., 2002). When the relevant literature is examined, it is seen that there are many studies examining the relationship between the airline physical elements dimension and passenger satisfaction dimension in the pre-pandemic period (Ali et al., 2014; Alsini, 2017; Ekiz et al., 2006; Farooq et al, 2018; Koklic et al., 2017; Nadiri et al., 2008; Nedunchezhian & Thirunavukkarasu, 2018; Okumuş & Asil, 2007a; 2007b; Suki, 2014; Tsaur et al., 2002; Wafik et al., 2017). There are also some studies (Biswakarma & Gnawali, 2021; Ishtiaq et al., 2021) that address this issue during the COVID-19 pandemic. Most of these studies support the positive relationship between airline physical characteristics and passenger satisfaction (Ali et al., 2014; Alsini, 2017; Ekiz et al., 2006; Farooq et al., 2018; Koklic et al., 2017; Nadiri et al., 2008; Okumuş & Asil, 2007a; Tsaur et al., 2002; Wafik et al., 2017). However, a few studies were conducted before the COVID-19 pandemic (e.g. Nedunchezhian & Thirunavukkarasu, 2018; Okumuş & Asil, 2007b; Suki, 2014) suggest no positive or negative relationship between airline physical characteristics and passenger satisfaction. While there are studies exploring the relationships between various service quality dimensions and customer satisfaction across different sectors during the COVID-19

pandemic (Nilashi et al., 2022; Rumiyati & Syafarudin, 2021), research specifically addressing this issue in air passenger transportation remains limited (e.g., Biswakarma & Gnawali, 2021; Ishtiaq et al., 2021; Shen & Yahya, 2021). The following hypotheses are proposed in this direction by considering the relevant literature.

H_1: Passengers' perception of service quality of airline physical elements has a positive effect on passengers' perception of airline general service quality during the COVID-19 pandemic.

H_2: Passengers' perception of service quality of airline physical elements has a positive effect on passengers' perception of airport general service quality during the COVID-19 pandemic.

2.2. The Relationship Between the Service Quality Perception of the Airport Physical Elements and General Service Quality Perceptions of Airline and Airport

This dimension is related to the physical elements of the airport. In this study, the statements related to the airport physical elements are “direction signs in the airport are sufficient”, “the airport I use is clean and modern”, “airport parking space is sufficient,” and “airport size is sufficient according to the number of passengers” (Ekiz et al. 2006; Nadiri et al., 2008). Improvements in airport physical elements these elements are generally known to increase passenger satisfaction. Some studies argue that this increase improves the airline's image and supports positive WOM communication (Ali et al, 2014; Farooq et al, 2018). When the literature before the COVID-19 pandemic is examined, it is seen that many studies on this subject suggest that there is a positive relationship between airport physical elements dimension and passenger satisfaction (Ali et al., 2014; Alsini, 2017; Ekiz et al., 2006; Farooq et al., 2018; Nadiri et al., 2008; Wafik et al., 2017). A few studies found no positive or negative relationship between the airport's physical elements dimension and passenger satisfaction (Nedunchezhian & Thirunavukkarasu, 2018; Suki, 2014). However, studies examining the relationships between different service quality dimensions and passenger satisfaction in different sectors during the COVID-19 pandemic are pretty limited (e.g. Hussaien et al., 2020; Hutabarat et al., 2021; Nilashi et al., 2022; Rumiyati & Syafarudin, 2021). Unlike the studies discussed above, this study investigates the effect of passengers' service quality perception of airport physical elements on airline general service quality perception and airport general service quality perception. Accordingly, the following hypotheses are proposed based on the relevant literature.

H_3: Passengers' perception of service quality of airport physical elements has a positive effect on passengers' perception of airline general service quality during the COVID-19 pandemic.

H_4: Passengers' perception of service quality of airport physical elements has a positive effect on passengers' perception of airport general service quality during the COVID-19 pandemic.

2.3. The Relationship Between Airline and Airport General Elements and General Service Quality Perceptions of Airline and Airport

Some airline/airport services include both airport and airline services, which are often difficult for airline passengers to distinguish one from another. One of the important features of this study that makes it unique is that it includes dimensions and expressions combined in this way, which have not been used in previous studies conducted before and after the pandemic. The dimension of airport and airline general elements included in the research model consists of the statements that the employees providing pre-flight services (from terminal entrance to boarding the aircraft) are trained and experienced, flight departure and arrival times are respected, passengers' luggage is given due care and attention, and it is easy to access the offices of airline businesses within the airport. A review of the relevant literature indicates that many studies conducted before the COVID-19 pandemic found a positive relationship between personal services and passenger satisfaction (Ali et al., 2014; Alsini, 2017; Ekiz et al., 2006; Farooq et al., 2018; Koklic et al., 2017; Nadiri et al., 2008). Among the studies conducted on this subject before the pandemic, there are also studies (Gures et al., 2014; Wafik et al., 2017) that reveal no positive or negative relationship between personal services and passenger satisfaction. Although studies examine the relationship between passenger satisfaction and personal services in different sectors during the COVID-19 pandemic (Nilashi et al., 2022; Restuputri et al., 2021), studies on airline passenger transport are limited. In one of the studies on the airline

sector, Shen and Yahya (2021) investigated how service quality and price affect passengers' loyalty to low-cost airlines. As a result of the research, no relationship was found between airport personal services and customer satisfaction. In their study, Riantama et al. (2021) stated that enthusiasm was an essential factor affecting airline business satisfaction during the COVID-19 pandemic. Piccinelli et al. (2021) revealed in their study that the concerns of airline passengers during the COVID-19 pandemic were concentrated on issues such as flight cancellations, compensations, and passenger service. The hypotheses proposed in line with the related literature are as follows:

H_5: Passengers' perception of service quality of airline and airport general elements has a positive effect on passengers' perception of airline general service quality during the COVID-19 pandemic

H_6: Passengers' perception of service quality of airline and airport general elements has a positive effect on passengers' perception of airport general service quality during the COVID-19 pandemic.

2.4. The Relationship Between Airline General Service Quality Perception and Passenger Satisfaction and Word of Mouth Communication

In this study, the dimension expressed as airline general service quality perception consists of the statements that the airline provides service with new, modern, and well-maintained aircraft, the number of flights of airline businesses is at a level to meet passenger demands, and the adequacy of measures to reduce pandemic risks on board. This dimension is considered a formative latent variable in the study. When the studies investigating the effects of the statements in the content of this dimension on passenger satisfaction and WOM communication are examined, it is seen that the service provided with new, modern, and well-maintained aircraft is considered within the scope of airline physical characteristics (Ali et al, 2015; Alotaibi, 2015; Ekiz et al., 2006; Nadiri et al., 2008; Suki, 2014). In the studies conducted before the COVID-19 pandemic, it was found that the services offered with new, modern, and well-maintained aircraft have a positive effect on passenger satisfaction (Ali et al., 2014; Alsini, 2017; Ekiz et al., 2006; Farooq et al., 2018; Nadiri et al., 2008; Okumuş & Asil, 2007b) and WOM communication (Nadiri et al., 2008) within the scope of airline physical elements.

In many studies (Ali et al, 2015; Alotaibi, 2015; Ekiz et al., 2006; Nadiri et al., 2008), the statement "the number of flights of airline businesses is at a level to meet passenger demands" is included in the empathy dimension. The statement "the number of flights of airline businesses by passenger demands" is also related to the empathy dimension and is related to airline passengers' general service quality perception. In this context, it was found that this statement had a positive effect on passenger satisfaction (Ali et al., 2014; Alsini, 2017; Ekiz et al., 2006; Farooq et al., 2018; Nadiri et al., 2008) and WOM communication (Nadiri et al., 2008) within the empathy dimension before the COVID-19 pandemic. In this context, many studies above suggest a positive relationship between empathy and passenger satisfaction. However, when the studies conducted on this subject before the COVID-19 pandemic are examined, there are also studies (Leong et al., 2015; Tsaur et al., 2002; Wafik et al., 2017) that reveal that there is no positive relationship between empathy dimension and passenger satisfaction. During the COVID-19 pandemic, although there are studies examining the relationship between service quality dimensions and customer satisfaction in different sectors (Nilashi et al., 2022; Rumiyati & Syafarudin, 2021), research on this issue in airline passenger transportation is quite limited. Finally, when the literature is examined within the scope of the statement "adequacy of measures to reduce pandemic risks in the aircraft", the number of studies on this subject during the COVID-19 pandemic is very limited. Therefore, the relevant hypotheses of the study are proposed as follows:

H_7: Passengers' perception of airline general service quality has a positive effect on passenger satisfaction during the COVID-19 pandemic.

H_8: Passengers' perception of airline general service quality has a positive effect on WOM communication during the COVID-19 pandemic.

2.5. The Relationship Between Airport General Service Quality Perception and Passenger Satisfaction and Word of Mouth

In this study, the dimension expressed as the perception of airport general service quality is considered as a formative latent variable formed with the statements "adequacy of the reliability of airport security controls, adequacy of the comfort of the waiting lounge at the airport, convenience of transportation between the city and the airport, and adequacy of the practices for the COVID-19 pandemic control at the airport". In most of the studies conducted before the COVID-19 pandemic, this statement was found to have a positive effect on passenger satisfaction (Ali et al., 2014; Alsini, 2017; Ekiz et al., 2006; Farooq et al., 2018; Nadiri et al., 2008) and WOM communication (Nadiri et al., 2008) within the scope of airport physical elements.

The statement "Convenience of transportation between the city and the airport" has been included in the empathy dimension in many studies in the literature (Ali et al, 2015; Alotaibi, 2015; Ekiz et al., 2006; Nadiri et al., 2008; Suki, 2014) and has been found to have a positive effect on both passenger satisfaction (Ali et al., 2014; Ekiz et al., 2006; Farooq et al., 2018; Nadiri et al., 2008; Suki, 2014) and WOM communication (Nadiri et al., 2008). Some studies (Nilashi et al., 2022; Rumiyati & Syafarudin, 2021) examine the relationships between service quality dimensions and customer satisfaction in different sectors considering the COVID-19 pandemic.

Based on the connection of the air transport sector with the tourism sector, Liu et al. (2023) suggest that individuals' risk perceptions about travelling in risky situations such as Covid-19 decrease with their knowledge and that reducing their concerns will enable them to travel safely during risky periods such as pandemics. However, when the relevant literature was examined during this study, no study included the expression "adequacy of practices (for example, body temperature control) for the COVID-19 pandemic control at the airport". This statement was added to the study by the authors within the scope of practices during the pandemic. The following hypotheses were proposed in line with the relevant literature:

H_9: Passengers' perception of airport general service quality has a positive effect on passenger satisfaction during the COVID-19 pandemic.

H_{10}: Passengers' perception of airport general service quality has a positive effect on WOM communication during the COVID-19 pandemic.

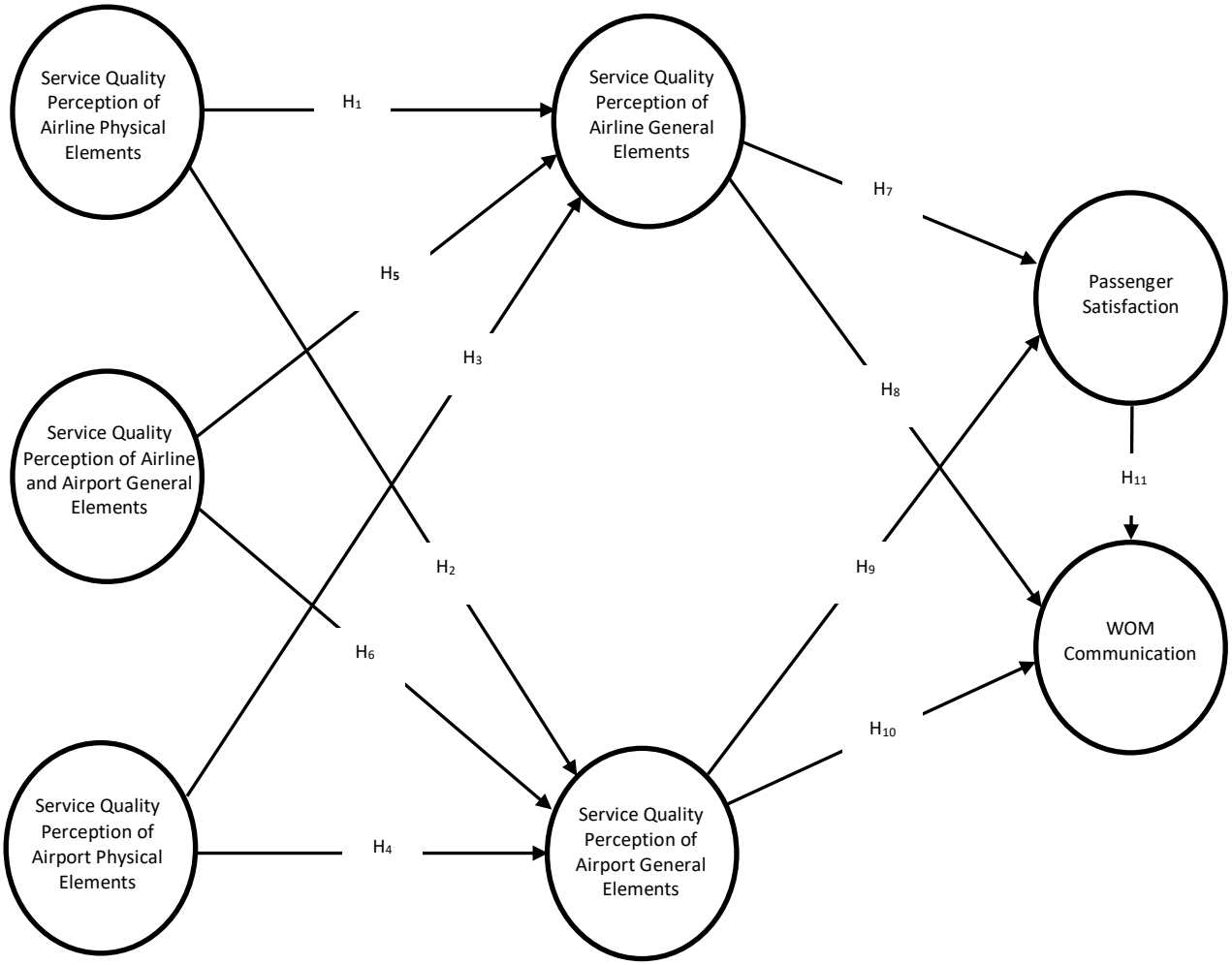
2.6. The Relationship Between Passenger Satisfaction and Word of Mouth

In the aviation industry, satisfaction has often been identified as the primary determinant of passengers' behavioural intentions (Tam et al., 2022). The passenger satisfaction dimension of airline service quality includes the passenger's satisfaction with the airline, his/her impression of the airline, and his/her positive opinions towards the airline (Ekiz et al., 2006; Nadiri et al., 2008). The higher customer satisfaction, the higher the likelihood that the customer will spread positive WOM communication and repurchase (Davidow, 2003). A review of the relevant literature reveals that the relationship between passenger satisfaction and WOM communication has been the focus of numerous studies in the airline industry prior to the COVID-19 pandemic.

Most of the previous studies (Ahmadi, 2018; Gürler & Erturgut, 2018; Hussain et al., 2015; Nadiri et al., 2008; Nikookar et al., 2015; Önen, 2017; Suki, 2014) suggest a positive relationship between passenger satisfaction and WOM communication. However, there are studies examining the relationship between passenger satisfaction and WOM communication in different sectors based on the COVID-19 pandemic (Giantari et al., 2021; Limna et al., 2022; Yuliantoro et al., 2019). It is seen that the research on this issue in the airline industry is quite limited. The final hypothesis of the study is as follows:

H_{11}: Passenger satisfaction of airline passengers has a positive effect on WOM communication during the COVID-19 pandemic.

Figure 1. Research Model



3. Methodology

3.1. Sampling and Data Collection Techniques

The study's population comprises all individuals aged 18 and above residing in Türkiye who utilize air transportation. According to DHMI data, the number of passengers using airways in Türkiye in 2021 is 128,350,222 (DHMI Airports Comparative Statistics, 2021). The minimum sample size capable of representing the number of individuals comprising the research's main population is 384 (Sekaran, 2003).

In this research, convenience sampling method was used. The survey was applied online to individuals who had travelled by domestic or international airlines throughout Türkiye after March 12, 2020 (the date when the COVID-19 pandemic was detected in Türkiye).

The survey form includes categorical questions and Likert Scale-type questions (1 "Strongly Disagree" to 5 "Strongly Agree"). For the face validity of the questions in the survey form, the opinions of 15 airline industry experts collected between 10-13 June 2021 were used. Then, the research data was collected across Türkiye between July 1, 2021 and December 2, 2021. At the end of the data collection process, 446 surveys were collected. 51 surveys with extreme values were excluded from the analyses. The analyses were conducted on 395 survey data.

3.2. Variables and Measurements

Although the study used the AIRQUAL scale as a basis for the survey form, the statements were adapted to account for the pandemic conditions, and the researchers added five statements. Table 1 shows the dimensions, statements, and statement codes discussed in the study.

Table 1. Dimensions and Statements

Dimensions	Items	Statements	Sources
Service Quality Perception of Airline Physical Elements	SQPAirliePE 1	Airline employees are aware of their duties.	Ekiz et al. (2006); Nadiri et al. (2008)
	SQPAirliePE 2	The presentation of food and beverages on the plane complies with hygiene conditions.	Authors
	SQPAirliePE 3	The plane's common areas (toilets, corridors, etc.) are good regarding cleanliness and hygiene.	
Service Quality Perception of Airline and Airport General Elements	SQPAAGE 1	Employees serving before the flight (from the entrance terminal to boarding the plane) are trained and experienced.	
	SQPAAGE 2	Flight departure and arrival times are respected.	Ekiz et al. (2006); Nadiri et al. (2008)
	SQPAAGE 3	The airline business shows due care and attention to passengers' luggage.	
	SQPAAGE 4	It is easy to reach the airline businesses' offices within the airport.	
Service Quality Perception of Airport Physical Elements	SQPAirportPE 1	Direction signs in the airport are sufficient.	
	SQPAirportPE 2	The airport I use is clean and modern.	
	SQPAirportPE 3	Airport parking space is sufficient.	
	SQPAirportPE 4	Airport size is sufficient according to the number of passengers.	
Airline General Service Quality Perception	AirlineGSQP 1	The airline I use offers service with new, modern-looking and well-maintained aircraft.	
	AirlineGSQP 2	The number of flights is sufficient to satisfy passenger demands.	
	AirlineGSQP 3	Measures to reduce the risk of a pandemic on the plane are sufficient.	Authors
Airport General Service Quality Perception	AirportGSQP 1	The reliability of airport security controls is sufficient.	Ekiz et al. (2006); Nadiri et al. (2008)
	AirportGSQP 2	The comfort of the waiting hall of the airport is sufficient.	
	AirportGSQP 3	Transportation facilities between the city and the airport are convenient.	
	AirportGSQP 4	Applications for the COVID-19 pandemic control at the airport (body temperature control, HES code inquiry, etc.) are sufficient.	Authors
Passenger Satisfaction	PSatisfaction 1	The airline services I used exceeded my expectations.	Wafik et al. (2017)
	PSatisfaction 2	Overall, I am satisfied with the airline I used	
WOM	WOM 1	I recommend the airline I use to lots of people.	Carroll & Ahuvia (2006)
	WOM 2	I try to spread the good word about the airline I used	

Formative and reflective structures were used in the proposed research model. When some studies using the AIRQUAL scale are examined, it is seen that mixed structures are used in research (Ali et al., 2021; Farooq et al., 2018; Mikulić & Prebežac, 2011; Shen & Yahya, 2021; Thirunavukkarasu & Nedunchezian, 2019). Based on the relevant literature, the reflective structure was used for service quality perception of airline physical elements, service quality perception of airline and airport general elements, service quality perception of airport physical elements, passenger satisfaction and WOM communication. A formative structure was used to perceive the airline and airport general service quality.

4. Results

JASP 0.14.1 (JASP Team, 2020) was used to analyze participants' demographic characteristics, and Smart PLS 3.2.8 (Ringle et al., 2015) was used for the measurement model and structural equation modeling analyses.

4.1. Demographics of the Respondents

The demographic characteristics of the respondents are seen in Table 2. When Table 2 is examined, it is seen that a higher percentage of female participants (66%) participated in the research than male participants (34%). 53% of the respondents are between 21 and 40 years old, and 48% have a bachelor's degree. In terms of monthly income, 61% of respondents have a monthly income of 9000 Turkish Lira (TL) or less. In terms of marital status, the participation rate is approximately equal.

Table 2. Demographic Profile of the Respondents

Variable	Level	Frequency	Percentage
Gender	Female	262	0.66
	Male	133	0.34
Marital Status	Single	202	0.51
	Married	193	0.49
Age	20 and under	34	0.09
	21-30	118	0.30
	31-40	90	0.23
	41-50	56	0.14
	51-60	52	0.13
	61-70	38	0.10
	71 and over	7	0.02
Education	Primary and secondary education	5	0.01
	High school	18	0.05
	Associate degree	22	0.06
	Undergraduate	188	0.48
	Graduate	82	0.21
	Post graduate	80	0.20
Monthly Income (Turkish Lira - TL)	3000 TL (Turkish Lira) and less	78	0.20
	3001 TL - 6000 TL	83	0.21
	6001 TL - 9000 TL	80	0.20
	9001 TL - 12000 TL	56	0.14
	12001 TL - 15000 TL	22	0.06
	15001 TL and more	76	0.19
	Total	395	100

4.2. Assessment of Measurement Model

In this section, measurement model analysis was performed to assess the suitability of the data for PLS-SEM analysis. PLS-SEM, one of the preferred methods, especially in marketing and management information systems, has the advantage of working with small and huge samples. In addition, methodological features such as the ability to analyse data that do not exhibit a normal distribution, being easily applicable in complex models, and formative and reflective structures are the reasons for preference for using PLS-SEM. (Hair et al., 2011; Hair et al., 2013). Measurement model analysis was conducted separately for formative and reflective structures, and the analysis results are presented below.

4.2.1. Assessment of Formative Measurement Model

The study used the latent variables of airport general service quality perception and airline general service quality perception as formative variables. The statements' outer VIF values, factor weights, and factor loadings were analysed for the measurement model analysis of the formative variables. The analysis results of formative structures are seen in Table 3.

Table 3. VIF Values, Factor Weights and Factor Loadings of Formative Variables

Dimension	Items	VIF Values	Factor Weights of Formative Variables				Factor Loadings of Formative Variables			
			Factor Weights	Standard Deviation	t Value	p Value	Factor Loadings	Standard Deviation	t Value	p Value
Airport General Service Quality Perception	AirportGSQP 1	3.040	0.399	0.050	8.024	0.000	0.921	0.015	63.116	0.000
	AirportGSQP 2	2.939	0.253	0.047	5.365	0.000	0.889	0.016	56.121	0.000
	AirportGSQP 3	2.316	0.295	0.041	7.224	0.000	0.860	0.020	42.509	0.000
	AirportGSQP 4	2.817	0.179	0.048	3.743	0.000	0.862	0.024	36.197	0.000
Airline General Service Quality Perception	AirlineGSQP 1	2.522	0.411	0.038	10.898	0.000	0.913	0.014	66.791	0.000
	AirlineGSQP 2	2.568	0.514	0.039	13.283	0.000	0.940	0.011	85.509	0.000
	AirlineGSQP 3	1.736	0.188	0.027	7.069	0.000	0.753	0.024	30.899	0.000

Table 3 indicates that the outer VIF values for the statements in the formative structure range from 1.736 to 3.040. The general opinion is that outer VIF values should be below 5 (Hair et al., 2019). As the outer VIF analysis results are below the threshold value established in the literature, it can be concluded that there is no multicollinearity problem among the statements. Another analysis made in the measurement model of formative variables is the determination of the outer weights and factor loadings of the statements in the formative structure. For this purpose, the Bootstrapping technique was used in the Smart PLS program, and the analysis was made on 5000 sub-samples. As a result, the analysis shows the weights and p values of the statements in the formative structure, as seen in Table 3. Upon examining the table, the factor weights were found to be significant, as the p-values were less than 0.05. The analysis indicated that the p-values for the factor loadings of the statements in a formative structure were significant, and all factor loadings were above 0.50. As a result, the validity conditions are met for variables in a formative structure.

4.2.2. Assessment of Reflective Measurement Model

This study used latent variables such as service quality perception on airline physical elements, service quality perception on airline and airport general elements, passenger satisfaction, and WOM communication in a reflective structure. In this context, factor loadings of the statements in the reflective structure and Cronbach's Alpha, convergent validity, AVE (Average Variance Extracted) values, cross-loading values and discriminant validity of the dimensions in the reflective structure were analysed according to the Fornell-Larcker criterion. The analysis results are presented in Table 4.

When Table 4 is examined, it is seen that the factor loadings of the statements that constitute the reflective latent variables are between 0.903 and 0.974. These findings indicate that the statements' factor loadings are above the threshold value (0.70) specified in the literature (Hair et al., 2011; Hair et al., 2014; Yıldız, 2020).

For the internal consistency analysis of the reflective variables, Cronbach's Alpha (CA) and Composite Reliability (CR) values were calculated. In the literature, internal consistency reliability is ensured if the coefficients obtained are 0.70 or above (Hair et al., 2011; Hair et al., 2014; Yıldız, 2020). When Table 4 is examined, it is seen that CA values are between 0.862 and 0.949, and CR values are between 0.935 and 0.973. Therefore, CA and CR values are above the threshold value. These values show that the scale is internally consistent. Following internal consistency reliability, convergent validity analysis was conducted. For this purpose, latent structures' AVE values were calculated. To meet the convergent validity condition, AVE

coefficients must be over 0.50 (Hair et al., 2011; Hair et al., 2014; Yıldız, 2020). When Table 4 is examined, it is seen that AVE values are between 0.836 and 0.947. As a result, these results, together with the factor loading value, indicate that internal consistency and convergent validity are achieved.

Table 4. Measurement Model Results for Reflective Dimensions

Dimensions	Item Codes	Factor Loadings	CA	CR	AVE
Service Quality Perception of Airport Physical Elements	SQPAirportPE 1	0.937	0.949	0.963	0.868
	SQPAirportPE 2	0.932			
	SQPAirportPE 3	0.916			
	SQPAirportPE 4	0.942			
Service Quality Perception of Airline and Airport General Elements	SQPAAGE 1	0.909	0.916	0.947	0.857
	SQPAAGE 2	0.905			
	SQPAAGE 3	0.903			
	SQPAAGE 4	0.938			
Service Quality Perception of Airline Physical Elements	SQPAirliePE 1	0.930	0.934	0.953	0.836
	SQPAirliePE 2	0.932			
	SQPAirliePE 3	0.914			
Passenger Satisfaction	PSatisfaction 1	0.928	0.862	0.935	0.878
	PSatisfaction 2	0.946			
WOM	WOM 1	0.974	0.944	0.973	0.947
	WOM 2	0.972			

For the analysis of discriminant validity, cross-loading analysis of reflective variables and discriminant validity analysis according to the Fornell-Larcker criterion were conducted. In the cross-loading analysis, discriminant validity is ensured when the relationship between each item and a dimension other than the dimension with which it is theoretically related is weak (Henseler et al., 2015: 118). The highest factor loading value of each item is expected to be under its own dimension. The results of the cross-loading analysis are shown in Table 5 below.

Table 5. Cross-loading Analysis Results

Dimensions	Item Codes	(1)	(2)	(3)	(4)	(5)
Service Quality Perception of Airport Physical Elements (1)	SQPAirportPE 1	0.937	0.854	0.824	0.758	0.756
	SQPAirportPE 2	0.932	0.868	0.821	0.785	0.779
	SQPAirportPE 3	0.916	0.800	0.786	0.725	0.733
	SQPAirportPE 4	0.942	0.820	0.809	0.774	0.777
Service Quality Perception of Airline Physical Elements (2)	SQPAirliePE 1	0.886	0.930	0.897	0.835	0.805
	SQPAirliePE 2	0.820	0.932	0.799	0.798	0.797
	SQPAirliePE 3	0.779	0.914	0.731	0.766	0.760
Service Quality Perception of Airline and Airport General Elements (3)	SQPAAGE 1	0.866	0.878	0.909	0.828	0.808
	SQPAAGE 2	0.781	0.762	0.905	0.776	0.802
	SQPAAGE 3	0.711	0.737	0.903	0.788	0.780
	SQPAAGE 4	0.816	0.824	0.938	0.845	0.828
Passenger Satisfaction (4)	PSatisfaction 1	0.667	0.722	0.762	0.928	0.791
	PSatisfaction 2	0.852	0.890	0.890	0.946	0.910
WOM (5)	WOM 1	0.830	0.863	0.883	0.902	0.974
	WOM 2	0.759	0.792	0.830	0.870	0.972

As seen in Table 5, it is seen that the factor loadings each item are greater than the other factor loadings in the same dimension. Therefore, in terms of the analysis of cross-loadings in the model, the conditions of discriminant validity are met. In determining the discriminant validity, the analysis was also performed according to the Fornell-Larcker criterion. Table 6 shows the results of the discriminant validity analysis according to the Fornell-Larcker criterion.

Table 6. Discriminant Validity Analysis Results According to the Fornell-Larcker Criterion

Dimensions	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Service Quality Perception of Airport Physical Elements (1)	0.932				
Service Quality Perception of Airline Physical Elements (2)	0.897	0.926			
Service Quality Perception of Airline and Airport General Elements (3)	0.870	0.877	0.914		
Passenger Satisfaction (4)	0.817	0.865	0.886	0.937	
WOM (5)	0.817	0.852	0.880	0.911	0.973

Note: Diagonals represent the square root of the AVE, while the off diagonals represent the correlations.

Examining Table 6 reveals that the square root of the AVE value for each latent structure is greater than its correlation coefficients with other structures, indicating that Fornell-Larcker discriminant validity is achieved.

According to the measurement model analysis results, the variables and latent structures are suitable for structural equation modelling analysis.

4.3. Results of Structural Equation Model

The research model was analysed using partial least squares path analysis (PLS-SEM). In evaluating the model, β coefficients (path coefficients), t-values (t value > 1.96), determinant coefficient (R^2), effect size (f^2), and predictive power (Q^2) values were analysed. T-values were calculated by generating 5000 subsamples from the original sample through the bootstrapping technique to assess the significance of PLS path coefficients. The findings obtained from PLS-SEM analysis are shown in Table 7.

Table 7. PLS-SEM Results

Hypothesis	**Paths**	**Path Coefficient**	**Standard Deviation**	**t value**	**p value**	**Result**
1	Service Quality Perception of Airline Physical Elements -> Airline General Service Quality Perception	0.395	0.059	6.649	0.000	Supported
2	Service Quality Perception of Airline Physical Elements -> Airport General Service Quality Perception	0.293	0.054	5.426	0.000	Supported
3	Service Quality Perception of Airport Physical Elements -> Airline General Service Quality Perception	0.089	0.052	1.708	0.088	Supported
4	Service Quality Perception of Airport Physical Elements -> Airport General Service Quality Perception	0.305	0.052	5.908	0.000	Supported
5	Service Quality Perception of Airline and Airport General Elements -> Airline General Service Quality Perception	0.470	0.054	8.780	0.000	Supported
6	Service Quality Perception of Airline and Airport General Elements -> Airport General Service Quality Perception	0.386	0.047	8.276	0.000	Supported

Table 7. PLS-SEM Results (Continue)

Hypothesis	Paths	Path Coefficient	Standard Deviation	t value	p value	Result
7	Airline General Service Quality Perception -> Passenger Satisfaction	0.578	0.047	12.268	0.000	Supported
8	Airline General Service Quality Perception -> Word of Mouth Communication	0.288	0.059	4.865	0.000	Supported
9	Airport General Service Quality Perception -> Passenger Satisfaction	0.366	0.048	7.679	0.000	Supported
10	Airport General Service Quality Perception -> Word of Mouth Communication	0.116	0.052	2.230	0.026	Supported
11	Passenger Satisfaction -> Word of Mouth Communication	0.549	0.060	9.140	0.000	Supported

The hypotheses were evaluated according to the p = 0.90 confidence level. Studies in the literature show similar evaluations (Anderson & Swaminathan, 2011; Hays & Hill, 2001; Rita et al., 2019). Reviewing Table 7 indicates that all hypotheses are significant and have been supported. When the standardized beta coefficient (β) of the hypotheses is examined, it is seen that the perception of service quality related to airline physical elements has a significant effect on the airline general service quality perception (H_1) at the level of β=0.395. The effect of service quality perception of airline physical elements on airport general service quality perception (H_2) is β=0.293. Hypothesis H_3, which aims to reveal the effect of passengers' perception of service quality of airport physical elements on their perception of airline overall service quality, is statistically significant at a 90% confidence level. However, the effect level of this hypothesis (β=0.089 and p=0.088) is relatively low. When the effect of service quality perception of airport physical elements on airport general service quality perception (H_4) is analysed, it is seen that this hypothesis has an effect at the level of β=0.305. The effect of the perception of service quality related to airline and airport general elements on the perception of airline general service quality (H_5) has an effect at the level of β=0.470. The effect of service quality perception of airline and airport general elements on airport general service quality perception (H_6) is β=0.386. In hypothesis, H_7, which has the highest effect among the hypotheses, the effect of airline general service quality perception on passenger satisfaction is β=0.578. Hypothesis H_8, which expresses the effect of airline general service quality perception (airline's offering service with new, modern, and well-maintained aircraft, airline's number of flights being at a level to meet passenger demands, adequacy of measures to reduce pandemic risks on board) on WOM communication, has an effect at the level of β=0.288. In hypothesis H_9, the effect of airport general service quality perception (reliability of airport security controls, comfort of waiting lounges, convenience of transportation facilities between the city and the airport, adequacy of practices for the COVID-19 pandemic control at the airport) on passenger satisfaction is β=0.366. Hypothesis H_{10}, which expresses the effect of airport general service quality perception on WOM communication, has an effect of β=0.116. Finally, hypothesis H_{11}, which expresses the effect of passenger satisfaction on WOM communication, was found to have an effect at the level of β=0.549.

4.4. VIF, R^2, f^2, Q^2 Analysis Results of SEM Analysis

Following the structural equation modelling analysis, the endogenous VIF values, coefficients of determination (R^2), effect size (f^2), and predictive power (Q^2) values of the latent variables were analysed. The results are shown in Table 8.

Table 8. VIF, R^2, f^2, Q^2 Analysis Results

Dimensions	Airport General Service Quality Perception				Airline General Service Quality Perception				Passenger Satisfaction				WOM			
	VIF	f^2	R^2	Q^2	VIF	f^2	R^2	Q^2	VIF	f^2	R^2	Q^2	VIF	f^2	R^2	Q^2
Service Quality Perception of Airport Physical Elements	6.024	0.142	0.892	0.688	6.024	0.008										
Airport General Service Quality Perception									4.718	0.182	0.844	0.731	5.575	0.016	0.854	0.803
Service Quality Perception of Airline and Airport General Elements	5.118	0.269			5.118	0.281	0.846	0.634								
Service Quality Perception of Airline Physical Elements	6.372	0.125			6.372	0.160										
Airline General Service Quality Perception		0.269							4.718	0.454	0.844	0.731	6.860	0.083	0.854	0.803
Passenger Satisfaction													6.405	0.323	0.854	0.803

Cohen et al. (2003: 424-425) argue that the multicollinearity threshold value should generally be smaller than the traditional rule of thumb of VIF = 10. In the study of Smith et al. (2020: 21), it is stated that the VIF threshold value is acceptable up to 10 in the analysis of the endogenous VIF values of each latent variable. Kalnins & Praitis (2025: 60) state that methodologists have different views on the effectiveness of VIF threshold values, citing Hair et al. (2006: 230), who specifically recommend the use of a threshold value of ten as the VIF threshold value, but state that when sample sizes are smaller, the researcher can be more restrictive. When the results in Table 8 are analysed, it can be stated that there is no multicollinearity problem among the latent variables.

The coefficient of determination (R^2), which shows what percentage of the endogenous latent variables is explained by the latent exogenous variables, is weak if it is between 0.25 and 0.49, moderate if it is between 0.50 and 0.74, and strong if it is 0.75 and above (Hair et al., 2011; Yıldız, 2020). When Table 8 is analysed, it can be stated that the R^2 values of all latent endogenous variables are 0.75 and above, which indicates a strong determination coefficient.

The predictive power analysis of the structural equation model is only applied to reflective variables. This analysis is a method based on reusing the sample. This analysis, which is based on re-running the analysis without including the statements of a latent variable in the model (Ali et al., 2016), is applied by using the blindfolding technique in the Smart PLS program. In order to state that the proposed research model has predictive power, the Q^2 value should be higher than zero. A result higher than zero indicates that the proposed research model has predictive power (Hair et al., 2011). When Table 8 is analysed, it is seen that the proposed model has high predictive power.

The f^2 coefficient (the effect size) shows the shares of each exogenous latent variable in the rate of explanation of endogenous latent variables (Yıldız, 2020); in other words, the extent to which an exogenous latent variable in the model contributes to the R^2 value of an endogenous latent variable (Hair et al., 2013). An effect size of 0.02 and above means a small effect size; 0.15 and above means a medium effect size; and 0.35 and above means a large effect size (Yıldız, 2020). An effect size value less than 0.02 indicates no effect (Hair et al., 2016). When the f^2 values in Table 8 are examined, it is seen that the f^2 of service quality perception of airport physical elements on airport general service quality perception is small and has no

effect on airline general service quality perception; the f^2 of airport general service quality perception on passenger satisfaction is medium and has no effect on WOM; the f^2 of service quality perception of airline physical elements on airport general service quality perception is small and has medium effect size on airline general service quality perception; the f^2 of airline general service quality perception on passenger satisfaction is large, while the f^2 on WOM is small; the f^2 of service quality perception of airline and airport general elements on airport general service quality perception and airline general service quality perception is medium, and finally, the f^2 of passenger satisfaction on WOM is medium.

5. Conclusions

This study investigated the factors affecting airline passengers' perceptions of airline service quality during the COVID-19 pandemic, the effect of these factors on passenger satisfaction, and the effect of passenger satisfaction on WOM communication. As a result of the research, the effect of airline general service quality perception on passenger satisfaction was found to be at a high level. The fact that airline businesses provide services with new and well-maintained aircraft and the number of flights at a level that meets passenger demands positively affects passenger satisfaction. This finding is consistent with the results of the studies conducted by Nadiri et al. (2008) and Ali et al. (2014). As a result of this study conducted in Türkiye during the COVID-19 pandemic, it can be stated that the pandemic measures taken in flight also positively impact airline passengers' satisfaction.

The study also analysed the impact of airport physical elements on the perception of airline general service quality, and a low but significant effect was found. Passengers' first impressions of the airport include the adequacy of directional signs, cleanliness, parking and capacity. However, when considering the COVID-19 pandemic, airline general service quality perception includes factors such as the appearance of airplanes, the number of flights, and pandemic measures. Therefore, the perceived service quality related to airport physical elements is expected to have a low impact on the perception of airline general service quality.

Another important finding of the study is that passenger satisfaction significantly and positively affects WOM communication during the COVID-19 pandemic. It is known that customer satisfaction has a positive effect on WOM communication. Indeed, exceeding the expectations of airline passengers regarding the service provided by the airline company they use and achieving overall satisfaction are significant factors influencing airline passengers' WOM communication behavior. This finding is consistent with the results of previous studies (Ahmadi, 2018; Davidow, 2003; Gürler & Erturgut, 2018; Hussain et al., 2015; Nadiri et al., 2008; Nikookar et al., 2015; Önen, 2017; Suki, 2014; Zeithaml et al., 1996).

The study results show that airline passengers' perception of airline general service quality has a higher impact on WOM communication than airport general service quality perception. Considering that this study is based on the COVID-19 pandemic, it is possible to state that the measures taken in the aircraft, the number of flights, and the appearance of the aircraft are especially effective in WOM communication with passengers. Another significant result is the effect of airline passengers' perception of airline general service quality on passenger satisfaction is higher than that of airport general service quality. The results of the research are consistent with many studies examining airline service quality (Ali et al, 2015; Alotaibi, 2015; Alsini, 2017; Biswakarma & Gnawali, 2021; Ekiz et al., 2006; Farooq et al., 2018; Nadiri et al., 2008; Okumuş & Asil, 2007b; Suki, 2014).

5.1. Theoretical Implications

In this study, the issues of service quality, passenger satisfaction, and WOM communication, which have been prominent in the marketing literature are examined in the airline industry during the COVID-19 pandemic. In the study, a research model was created by adding a new service quality perception dimension named airline and airport general elements, and the proposed research model was analysed by PLS-SEM.

Covid-19 is still ongoing with new variants (Quarleri et al., 2024). When the relevant literature is analysed, it can be stated that the number of studies conducted on this issue during the COVID-19 pandemic is still limited. In this context, the current study contributes to literature in theoretical and methodological terms.

Apart from the generally accepted service quality dimensions in the literature, this study examined and analysed the proposed research model by creating a new dimension that includes the service quality perception of the elements general to the airline and airport in addition to the airline physical and airport physical elements. In this respect, it is believed that the study will provide a theoretical background for future research. An important finding of the study is the effect of service quality perception of airport physical elements on airline general service quality perception. Although the tested hypothesis was statistically significant, it was found to have a very low effect level. The fact that such an association is not found in the related literature makes it necessary to make an evaluation in terms of expressions. It is thought that this finding will contribute to theoretical literature. One of the methodological contributions of the study is the use of formative and reflective constructs together. In this respect, the study will contribute to structural equation modelling studies with mixed structures, which are few compared to reflective and formative structural equation models. In addition, unlike the existing literature, differentiating the service quality perceptions of airline passengers towards airline and airport businesses during the COVID-19 pandemic into reflective and formative dimensions with different contents and revealing the effects of these dimensions on passenger satisfaction and WOM communication constitute the theoretical originality of the study.

5.2. Practical Implications

The research results contribute to the airline and airport businesses' conscious evaluation of service quality and their effects on passenger satisfaction and WOM communication to cope with large-scale pandemics and similar crises before they face significant losses. Especially during pandemic periods, the nature of the situation reveals different needs and require precautions to be taken. Therefore, understanding the factors affecting the perceived service quality of airline passengers will help airline companies develop passenger-focused marketing strategies. Among the prominent findings of the study is that airline passengers' perception of airline general service quality has a higher effect on passenger satisfaction. In this context, airline businesses can be recommended to keep their aircraft fleet modern, new, and well-maintained. In addition, keeping the number of flights at a level to meet passenger demands and taking effective measures to reduce pandemic risks are among the essential factors affecting passenger satisfaction.

Airline passengers' perception of airport general service quality is another factor affecting passenger satisfaction. In this context, it is recommended that practices such as airport security controls, waiting room comfort, transportation facilities to the airport, and the adequacy of the COVID-19 pandemic practices at the airport should be effectively implemented during pandemic periods. It should not be forgotten that the perception of service quality regarding airline physical elements, the perception of service quality regarding airline and airport general elements, and the perception of service quality regarding airport physical elements also have an impact on passenger satisfaction. Therefore, airline employees' knowledge of their responsibilities, the hygiene of the food and beverage service on board, the cleanliness of the common areas on board, the training and experience of the employees serving before the flight, compliance with the departure and arrival times, care and attention to luggage, ease of access to the offices of airline businesses, direction signs, clean and well-maintained airport, adequacy of car parking and airport capacity are critical. Thus, it can be recommended that airline companies focus on enhancing the quality of tangible cues by renewing the airport appearance as well as the exterior and interior appearance of their aircraft. Finally, this study found that passenger satisfaction positively affects WOM communication. Therefore, it can be suggested that airline and airport businesses should encourage satisfied passengers to participate in WOM communication.

5.3. Limitations and Future Directions

As in many studies, this study also has some limitations. One of these is that although the survey was conducted throughout Türkiye, it is not possible to make a generalization about the results of the research due to reasons such as the number of questionnaires reached, the region covered by the study, and the sampling method. Another limitation of the study is that the surveys were conducted between July 1, 2021 and December 2, 2021, a period when the effects of the pandemic were still being felt in Türkiye. For this

reason, the online survey method was used due to both time constraints and health concerns. Another negative aspect of conducting the study during the pandemic was that the study is focused on air travel where the most restrictions are imposed during the pandemic period and people approach with uneasiness. Therefore, although the number of questionnaires collected was sufficient, it was difficult to reach the right participants. The use of the online surveys limited the possibility of explaining the statements that participants did not understand. Using non-random sampling methods is one of the limitations of this study. Therefore, it may be recommended that future research be conducted using random sampling methods in different country samples. In addition, it may be recommended to conduct future research on different airline business models, taking into account the travel preferences of passengers, conducting qualitative research, and conducting research on employees in different positions in the airline industry. Implementing such a study in other areas of the transportation sectors (such as maritime or road transportation) or different business areas of the service sector will enable the comparison of the results and new contributions to literature. This study was not concerned with variables such as demographic factors, i.e., age, gender, education, or income. These factors may influence passengers' airline preferences. Therefore, future researchers can explore these effects on passenger satisfaction, passenger loyalty, or WOM communication. Also, it can be suggested that passengers' perceptions of airline and airport service quality be compared using different research models.

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